# COALITION OF ENVIRONMENTAL, ENVIRONMENTAL JUSTICE, TRIBAL AND FISHING ORGANIZATIONS' COMMENTS ON THE FIFTH STAFF DRAFT OF THE DELTA PLAN

## September 30, 2011






NORTHERN CALIFORNIA COUNCIL


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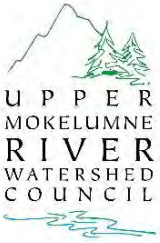
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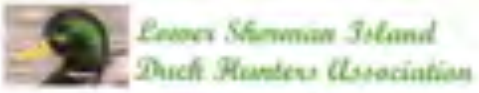














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**COALITION OF ENVIRONMENTAL, ENVIRONMENTAL JUSTICE AND FISHING ORGANIZATIONS**

To: Joe Grindstaff, Executive Officer
Delta Stewardship Council

From: Coalition of Environmental, Environmental Justice and Fishing Organizations

Subject: Comments on the Fifth Staff Draft of the Delta Plan

September 30, 2011

Our coalition of more than 200 organizations is pleased to provide comments as you continue the development of the Delta Plan and we look forward to your ongoing development of the Plan. We continue to be impressed with your work processes and transparency, which are raising the bar for public agencies.

At the same time, we have serious misgivings about the overall direction of the plan, especially as regards the balancing of the Public Trust, and we have recommendations for actions that are needed by the Council to arrive at a completed and legal Delta Plan. As required by Water Code §85203: "[t]he longstanding constitutional principle of reasonable use and the public trust doctrine shall be the foundation of state water management policy and are particularly important and applicable to the Delta."

Thirty plus years of failure by state and federal agencies to protect the Delta and balance competing demands for limited water resources led the State Legislature to enact the Delta Reform Act of 2009 (Act). The Act created and directed the Delta Stewardship Council (Council) to develop a legally enforceable Delta Plan to achieve the coequal goals of "providing a more reliable water supply for California" and "protecting, restoring, and enhancing the Delta ecosystem" in a manner that "protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." The Act also established a state policy of promoting regional self-reliance and reduced reliance on the Delta in meeting California's future water supply needs.

The Delta Plan functions as a strategic document providing guidance and recommendations to cities, counties, and State, federal, and local agencies on how to restore the Delta ecosystem and provide a more reliable water supply for California. It contains regulatory policies and establishes a certification process for proposed projects to comply with the Delta Plan and envisions incorporation of other "completed" plans into the Delta Plan. In other words, the Council must "certify" that proposed plans, projects, and covered actions are consistent with the Delta Plan.

The California Supreme Court, in the Mono Lake decision, explicitly set forth the state's "affirmative duty to take the public trust into account in the planning and allocation of water resources and to protect public trust uses whenever feasible." The Council clearly has trustee

responsibilities in balancing the public trust. Planning and allocation of limited and oversubscribed resources implies analysis and balancing of competing demands. Inexplicably, we find little effort to balance the public trust obligations and resolve competing demands within the Fifth Draft of the Delta Plan.

Failure to define and quantify the coequal goals is undermining the Council's best efforts. It is not clear what is meant by: a more reliable water supply; protecting, restoring, and enhancing the Delta ecosystem; enhancement of the Delta as an evolving place; regional self-reliance; and reduced dependence on the Delta. For example, reliably receiving full contracted quantities or receiving the present level of water deliveries is considerably different than reliably receiving water after the public trust has been balanced and the Delta ecosystem protected. What are the yardsticks by which success will be documented? Failure to define "getting well together" was the genesis of the CalFed debacle and resolving California's continuing water crisis is unlikely without definition and quantification of these terms.

The inescapable reality is that consumptive water rights issued by the State Water Resources Control Board (State Board) exceed unimpaired flow into the Delta and contracts for state and federal project water are far greater than available supplies. Increased pollutant mass loading to the estuary has exhausted assimilative capacity and exacerbated water quality degradation. Ever-increasing diversion of water has led to the collapse of estuary's biological tapestry. These actions have injured beneficial uses and degraded public trust resources. Two recent state agency reports, developed through extensive public processes, conclusively establish that an increase in Delta outflow is necessary to protect and restore the estuary's aquatic ecosystem.[1]

California's water system is seriously oversubscribed, operating in deficit, and incapable of meeting competing demands on the system. The Council's charge is to resolve this imbalance. In the near term, it's largely a zero sum game. More water to protect public trust values translates to less water for consumption values. Over the longer term, redefining the CVP and SWP to reflect legally available water supplies, improved efficiencies, conservation, reclamation, reuse and improved storage and diversion methods can significantly alleviate, but likely not completely eliminate water shortages. The Council cannot evade having to make difficult decisions regarding the distribution of limited water resources. Sadly, the Fifth Draft of the Delta Plan embraces the status quo and fails to provide the structure and information critically necessary to make intelligent, but painful decisions.

Economics is the science of choice and the study of the allocation of scarce resources among competing demands. Water is scarce in California. Consequently, any process that involves water allocation and protection of biophysical (instream) or in-Delta use values needs to consider the economic value of the public trust and the economic consequences of potential choices or alternatives – i.e., the balancing of the public trust and competing municipal, industrial and agricultural beneficial uses. As a state agency with public trust responsibilities, the Council is required to balance the public trust in both the Delta Plan and Environmental Impact Report (EIR). This requirement to balance the public trust is also intrinsic to other agencies in other and

[1] State Water Resource Control Board. August 2010. *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*; California Department of Fish and Game. November 2010. *Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta.*

future proceedings, including; the State Board's current San Joaquin Flow and South Delta Salinity proceeding and equivalent EIR, their anticipated Bay-Delta water rights proceeding and the Bay Delta Conservation Plan's (BDCP) Habitat Conservation Plan and EIR.

The Mono Lake proceeding was a classic public policy proceeding of allocating a scarce resource among competing demands. It identified the ecological uses of trust resources and their biological requirements, examined the relationship between water flows and impacts on ecological uses and compared the costs to the City of Los Angeles acquiring water from other sources with the economic benefits of protecting the ecological values of the lake's public-trust resources.[2] The City claimed that the costs of alternatives to diverting water from the lake were prohibitive. However, comprehensive economic analysis demonstrated that the economic benefits of protecting the ecological uses of the Mono Lake's public trust resources were more than 47 times greater than the costs to Los Angeles.[3] The State Board considered other factors along with economic results in reaching a decision, but economic factors played a significant and pivotal role.

One of the significant flaws of previous and unsuccessful Bay-Delta proceedings has been the absence of a comprehensive economic evaluation of the benefits of protecting the estuary and in-Delta beneficial uses compared to the benefits of diverting and exporting water from the estuary. This absence has deprived decision makers and the public of critical information fundamental to reaching informed and difficult decisions on balancing competing demands.

The Fifth Draft Delta Plan is bereft of any economic analysis of public trust values. The current draft of the Delta Protection Commission's *Economic Sustainability Plan for the Delta*, which is scheduled to be completed 22 September 2011, only addresses potential economic **impacts** from several conceptual alternatives on Delta agriculture, recreation, infrastructure, and local economies. It excludes impacts to the commercial and subsistence fishing communities and the intrinsic ecological value of the Delta as an ecosystem. It ignores water quality impacts, other than agriculture. It fails to address the **value** of public trust resources, including the economic significance and the contingent valuation of fisheries, natural resources, and associated ecosystem services. Nor does it address the relative economic value of the uses to which water is applied. In short, it is a partial but wholly inadequate initial step to providing the comprehensive economic analysis necessary for the Council to balance the public trust.

The State Water Contractors recently presented BDCP with a report claiming that a peripheral canal would create about 7 to10 jobs for every million dollars spent on construction or operation. However, published estimates of jobs created by investment in water/energy efficiency projects range from 15 to 22 jobs per million dollars of direct investment, with the added benefit of enormous water savings. Furthermore, a full socio-economic analysis would likely demonstrate

[2] Koehler, C.J. 1995. "Water Rights and the Public Trust Doctrine: Resolution of the Mono Lake Controversy." *Ecology Law Quarterly* 22: 451; Casey, E. 1984. "Water Law—Public Trust Doctrine," *Natural Resources Journal* 24: 809-825.

[3] Loomis, J. 1987. "Balancing Public Trust Resources of Mono Lake and Los Angeles' Water Right: An Economic Approach." *Water Resources Research* 23: 1449-1456. August; Loomis, J. 1997. Use of Non-Market Valuation Studies in Water Resource Management Assessments. Colorado State University; Duffield, J. 2010. *Valuing Ecosystem Services in River and Lake Systems: Methods and Western U.S. Case Studies*. Presentation, Salt Lake City, April 28.

that a restored Delta ecosystem would generate economic benefits far in excess of any benefits arising from constructing a peripheral canal.

Beyond protecting California's common property right in public trust resources, the balancing of limited water supplies must address the relative economic value of competing interests. For example, what is the societal value in providing Kern County, comprising a fraction of one percent of the state's population and economy, the same quantity of Delta water as the South Coast, with half the state's population and economy? What is the value to society of using public subsidies to irrigate impaired lands to benefit some 600 landowners (some have estimated the vertically integrated ownerships to be even less, around 350), and that, by the nature of being irrigated, discharge prodigious quantities of toxic waste that impairs other beneficial uses? What is the economic value of using twice the amount of water to irrigate an orchard in the desert than is required elsewhere? What are the costs and benefits of reclamation, reuse, conservation and development of local sources? Should consumptive use of limited water supplies be prioritized on the basis of efficiency or economic value? Does health & safety take precedence over certain other uses?

The preceding are only examples of the difficult questions that must be addressed in any allocation of limited resources and balancing of the public trust. Economic analysis is crucial to providing the insight and guidance that will enable the Council to meet its mandate. Without such analysis, we do not believe the Council can successfully or legally comply with its legislative and constitutional obligations.

Comprehensive economic analyses are not academic exercises. They are routinely employed by state and federal agencies throughout the nation to address both market and non-market costs and benefits of water projects. A sampling of these resources and best practices is included as Attachment I. It is unlikely that a successful plan which meets the co-equal goals can be achieved without defining the goals that incorporate measurable performance objectives and which provide a scientific basis for evaluating the economic consequences of diverse alternatives. In the final analysis, the restoration of the Delta ecosystem cannot be measured in money spent, programs or projects implemented or acres converted to habitat. It must be measured by specific indices that quantify improvements in water quality and the health and abundance of fisheries and wildlife.

The entire document, while professing to espouse an understanding of the Delta cannot be complete without recognition that as a cultural area the first people of the state are not included or discussed in the document and that the water rights of the California Indians are still to be mitigated at this late date. Tribal uses of water must be considered in order to begin to embrace the failure of agencies to acknowledge tribal water rights as well as cultural rights guaranteed under treaty to access and use water ways and estuaries for tribal existence. California water law has refused to include the mitigation of tribal water rights as senior to all other, as well as the non-abrogation of water rights under treaty, despite the continued inference of the government to the Winters decision.

In addition to these above comments and recommendations pertaining to the Public Trust economic analysis, we have also based our remaining comments on the following overall findings:

1. The Delta is over appropriated and unless exports are reduced to a scientifically permissible level, the Delta estuary cannot be recovered in any scientifically acceptable sense.

2. The over appropriation stems primarily from CVP and SWP contract levels which cannot be met.

3. An aggressive water efficiency program – more aggressive and of longer duration that the 20/20 program – which includes both urban and agricultural users is a necessary component for reducing reliance on the Delta.

4. The Delta ecosystems and wildlife cannot be restored without significant reductions of pollutants that are currently being poured into the Delta and without significant improvements in the fabric of ecosystem habitats essential to sustaining beneficial uses of the Delta.

5. The water use reductions and savings shown in the EWC alternatives make major structural alternatives such as a canal or tunnel around or under the Delta and further surface storage unnecessary for water supply reliability.

6. While the Delta Reform Act provides broad narrative goals for the Delta Plan, it does not provide clear, specific, and measurable objectives as called for in Adaptive Management programs. The Delta Plan must not defer this next necessary step of Adaptive Management. The Plan must begin to establish clear and measurable goals, objectives, and performance measures; it must quantify goals and provide specific accomplishment dates. It must require the same of any BDCP plan that is incorporated into the Delta Plan.

7. As recommended in recent federal biological opinions, evaluations of fish passage around major Central Valley dams connected to the Delta should be conducted in order to determine the possible benefits to endangered salmonid species.

8. The Delta Plan must include actual consultation and planning that includes California tribal nations, federally and non-federally recognized, in order to include tribal needs and concerns for the uses of the waters into and out of the delta and how the transfer and use of these waters affects tribes and the inherent, non-abrogated rights of the tribes to these waters.

Our comments on specific chapters of the Fifth Draft Delta Plan follow.

## CHAPTER 2 – SCIENCE AND ADAPTIVE MANAGEMENT.

Although here are no Policies or Recommendations to respond to in this chapter, we have the following general comments and recommendations:

1. The adaptive management program outlined in the Delta Plan, while promising to incorporated science into the decision making process, is little more than window-dressing facilitating business-as-usual. Although here are no Policies or Recommendations to respond to in this chapter, we have the following general comments and recommendations:

2. The Delta Reform Act requires inclusion of science-based adaptive management in the Delta Plan for ongoing ecosystem restoration and water management decisions. While the Delta Plan requires that all covered actions include an adaptive management plan incorporating the nine-step framework, there is nothing that describes how the adaptive management will be implemented, how implementation will be evaluated, or even that it actually be implemented. Indeed, the Delta Plan does not mention the words "adaptive management" in it's *A More Reliable Water Supply, Restore the Delta Ecosystem, Improve Water Quality to Protect Human Health* and the Environment, *Reduce Risk to People, Property, and State Interests in the Delta* or Protect and *Enhance the Unique Cultural Recreational, Natural Resources, and Agricultural Values of the California as an Evolving Place* chapters. There is nothing in the Delta Plan to indicate that science, rather than the political agenda of water agencies, will determine water management decisions.

    - We therefore fully concur with the Delta Independent Science Board (DISB) recommendations that the principles of adaptive management must be applied in Chapters 4 through 8. These chapters must describe and demonstrate how adaptive techniques can be integrated into the actions proposed for the Delta Plan. Failure to do so would be a major oversight and, as indicated by the DISB, would undermine the legislative mandate for the co-equal goals.[4]

3. The panel convened by the National Research Council of the National Academies, in their 2011 evaluation of BDCP titled *A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan*, observes that most adaptive management efforts worldwide have failed primarily without the agreement of the water users. The failure to define and quantify critical goals and inclusion of agreements that limit requirements on water users undermine and sabotage the very concept of adaptive management because of institutional problems that include lack of resources necessary for expanded monitoring, unwillingness of decision makers to admit and embrace uncertainties in making policy choices and lack of leadership

[4] Delta Independent Science Board. *Final – Synthesis of Recommendations for the Delta Independent Science Board (DISB) on the Fifth Staff Draft Delta Plan*. September 16, 2011.

implementation.[5] The aims of adaptive management often conflict with institutional and political preferences. This is especially important, given the lack of definition of water supply reliability and ecosystem restoration in the Delta Plan and the inherent contradiction between restoration of the estuary and requirements in the BDCP Planning Agreement that provide assurances that no additional restrictions on the use of land, water, or financial resources beyond agreed-on amounts will be required.

4. Regulatory actions by state agencies, routine operation of the State Water Project, Central Valley Project and local facilities, as well as certain ministerial or emergency project and temporary water transfers are exempt from adaptive management requirements in the Delta Plan. Given the caustic review of BDCP's adaptive management program by the National Research Council's review team,[6] it is highly uncertain to what extent BDCP will include a meaningful adaptive management process. And, given the fact that the BDCP must be incorporated into the Delta Plan, it is uncertain whether the Council can fundamentally modify elements of the BDCP adaptive management program.

5. Previous adaptive management efforts in the Delta have grievously failed. CalFed's adaptive management program chaperoned the accelerated decline of the Delta's ecosystem. The "red light," signaling "take" at the export facilities, was often disregarded and the Water Operations Management Team frequently rejected the recommendations of the technical review teams. Agencies have refused to enforce requirements for project operations that they adopted. For example, the State Water Resources Control Board repeatedly refused to enforce the terms of its Cease and Desist Order against the Department of Water Resources and U.S. Bureau of Reclamation for violations of South Delta salinity standards. It further ignored blatant violations of the Vernalis and Delta outflow standards in 2009. If project operators and oversight agencies can routinely discount the results from adaptive management, then the process is little more than a Hollywood storefront implying progress that doesn't exist.

6. While the Delta Reform Act provides broad narrative goals for the Delta Plan, it does not provide clear, specific, and measurable objectives as called for in this Chapter. The Delta Plan must not defer this next necessary step of Adaptive Management. The Plan must begin to establish clear and measurable goals, objectives, and performance measures; it must quantify goals and provide specific accomplishment dates; it must model linkages between objectives and proposed actions; it must select and evaluate actions for implementation; it must design implementation actions with appropriate monitoring; and it must be peer reviewed. If the plan cannot be enforced, it is illegal:

    - As required in CEQA §15126.4 (D) (2): Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. In the case of the adoption of a plan, policy, regulation, or other

[5] Panel to Review California's Draft Bay Delta Conservation Plan, National Research Council. 2011. *A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan*: Washington D.C., page 38.
[6] *Ibid*, pages 38-44.

public project, mitigation measures must be incorporated into the plan, policy, regulation, or project design.

7. This Chapter needs to specify who makes the decisions on how to Respond or Adapt as a part of the Adaptive Management process. There must be legally binding accountability. To date, many of those decisions have been made (or in many cases not made) by the water exporters. This kind of decision-making cannot be tolerated in the implementation of the Delta Plan.

8. Adequate monitoring, which includes particulates, concentrations, and invertebrates along with sediments and flow is needed to provide early warnings and preventative actions. The extensive network of existing monitoring data needs to be analyzed by scientifically credible agencies to ensure public trust values are not being harmed or degraded.

## CHAPTER 3 – GOVERNANCE.

As stated in the draft, the Delta Plan is a strategic plan to provide guidance and make recommendations. The Water Code Section 85020 places some responsibilities on the Council that are state-wide and far reaching. The Council is to establish a structure upon which it may receive guidance and recommendations, both for covered and non-covered actions. The legislature also requires the Council to establish and oversee a committee of agencies responsible for implementing the Delta Plan. In the Fifth Draft there is still no mention of an Implementation Committee. Therefore, we continue to make the following recommendations relative to this responsibility:

1. Identify what relevant agencies must be included in the *"Governance or implementation Committee."*

    - Governance should be inclusive of Delta interests and stakeholders and include at least representatives of NGO agencies, the Delta Conservancy, commercial and recreational fishing, in-Delta community representatives, and landowners. G P1.

2. It is our recommendation that other interest parties be part of the process of decision-making within the Governance Committee to broaden the process to include consideration of non-agency issues. Examples would be:

    - Delta Conservancy
    - NGO representatives
    - Commercial/recreational fishing representative
    - In-Delta Community Representatives
    - Science Advisory Board member

3. Develop an organizational chart, which will show clearly the structure of the governance process, and identifies what additional advisory boards, committees, and outside inputs will be associated with the "Governance/Implementation *Committee."*

4. Develop a clear and concise list of responsibilities for the *Governance Committee,* and make clear the difference in process between covered and non-covered actions. Some areas of possible responsibility are:

    - The guiding principle of any governance committee should be the precautionary principle – First, do no harm. The fragility of the Delta ecosystem is such that it is already operating on the edge of tolerance, even with reduced reliance as mandated by the legislature. Hence, it is inappropriate to do anything that could risk additional stress.
    - General criteria for water operations, ensuring that appropriate Delta flows are maintained, water quality objectives are met, source water is protected, public trust values are protected, and beneficial uses are not degraded.
    - Restoration oversight to facilitate and implement restoration projects within the Delta to meet established restoration timing and completion dates.

- Work with the Science Advisory team to help manage the adaptive management efforts to ensure species recovery of aquatic resources.
- Coordinate with the Delta Conservancy on efforts with Delta communities, counties, and landowners.
- Establish and manage budgets to secure necessary funding both for the Council and for the other efforts in the Delta Plan.
- Oversight and recommendations on implementation of state wide water conservation, water use efficiency and reclamation programs, and ensuring that strategic goals are being both established and met.
- Meet with the SWQCB on important Delta issues – tributary flow criteria, Delta flow criteria, pollution issues in tributaries, illegal diversions, etc.
- Meet with the Delta Protection Commission on Delta levee repairs and other Delta protection issues, and to ensure that deadlines are being met.
- Meet with Delta and watershed communities to understand the best interface with them on local issues of concern, and to take actions necessary to ensure actions of the Council are protecting and enhancing the unique cultural, educational and agricultural values of the Delta and its watersheds.
- Develop specific recommendations for the legislature or other appropriate state agencies for actions to facilitate the Delta Plan to meet its responsibilities of Delta ecosystem protection, restoration and enhancement, as well as water supply reliability.
- Establish appropriate goals and objectives as well as timelines to achieve Delta restoration and water conservation, reclamation and efficiency strategies.
- Meet regularly to discuss the obligations of the SWP and CVP, their oversight responsibilities, and ways to bring contractual obligations more in line with available water.
- In addition to the above, there are other areas of concern that must be articulated within the process of governance, and in some cases, the governance structure must be designed to provide protections against outside interference. There must be a level of independence for decision makers. It must be clear that the science board will have influence on the decision making process, and not be left only as advisors hoping their advice is followed. It is unfortunate, but too many times politics has trumped science in decision-making in the Delta, and with water management in particular. In many ways, the success or failure of the Delta Plan may hinge on the ability to design a governance structure that protects decision makers from the impacts of those who have the desire to alter the process based on limited or short-term pressures.

5. There is little substance in the section titled: How Will The Policies Of The Delta Plan Work In Practice? (Pg. 56, line 28). We would suggest this is the perfect place to include a guidance outline of the process state and local agencies, landowners, and others would go through to meet consistency requirements of the Delta Plan. It is a good place for implementation actions required, as well as what enforcement actions are consistent with the authorities of the primary agencies. For example, recommendations in the area of water rights permit approval, changes in diversion points, or other water allocation issues that impact the co-equal goal requirement of the Delta Plan. (G P1)

6. On Page 54, line 27, we recommend changing the word "promote" to "meet." The sentence would then read: "The Council may incorporate other completed plans related to the Delta into the Delta Plan to the extent that the other plans *meet* the coequal goals." It would be a stronger statement if worded this way. (G P1)

7. Additionally, on line 35, under "Information, Comments, Advice," it would be advisable to provide some guidance on how the Delta Plan Science Program would interface with the BDCP science program, with restoration, monitoring and adaptive management. Currently, the BDCP oversight and management is to be done by the permitting agencies and permittees though the Council has not yet determined which agencies will be included. None of these BDCP oversight entities are scientists, yet they would be allowed to decide questions only scientists should answer. This appears to be inconsistent with the co-equal goals responsibility of the Delta Plan. (G P1)

8. Since the Delta Plan is expected to incorporate the BDCP should state and federal wildlife agencies certify it, we recommend that the Council provide specific, consistent, and regular guidance to the BDCP on what would be required for BDCP to be consistent with the mandates from the legislature in the Delta Plan. An example of the current inconsistency is: The Delta Plan mandates the state water board to establish Delta flows and major tributary flows by 2014 and 2018. It is stated that this is **key to the achievement of the co-equal goals** (line 7, pg. 86). Yet, there is no such policy in BDCP, since petitioning partners in the BDCP are opposed to establishing these flow standards. If the BDCP does not incorporate or use these flow standards in the plan, it would then NOT meet the co-equal goals required by the Delta Plan. It is hard to understand how the BDCP could be incorporated with this current inconsistency, and if it were, the Delta Plan would likely be challenged in court.

9. There needs to be a clear policy on the role of wildlife agencies relative to governance of restoration and adaptive management. What role will they have relative to final decision-making, including on water operations, both annual planning and real-time operational changes? Since the Council may be relying on the BDCP to provide this, again, we recommend the Council provide guidance to the BDCP on what is required to meet the statutory mandate of the Delta Plan. It is our opinion that wildlife agency input is being marginalized in the current BDCP plan, and it is critical for the Council to help clearly communicate to the exporters that the engagement of the wildlife agencies is critical to success in the Delta, and critical to BDCP becoming part of the Delta Plan. (G P1)

## CHAPTER 4 – WATER SUPPLY.

We view an aggressive statewide water efficiency and conservation program as a primary requisite toward reducing reliance on the Delta, as prescribed in your legislative mandate. A program that reduces overall water consumption throughout the state, especially in the intensive farming areas and major population centers relying on the Delta, makes possible the achievement of this critical mandate of reduced Delta reliance. The mandate likely will not be met without this cost effective water supply program.

One of the best opportunities to accomplish a thorough economic analysis of Public Trust values and balancing is by examining the alternatives to exported water. The alternatives to a continued high level of Delta exports are many, and they are contained in the efficiency and water use reduction solutions that are recommended in the EWC report: *California Water Solutions Now,* which is one of the alternatives being examined by your Council.

The Delta Flows Criteria promulgated by the State Water Resources Control Board clearly indicates that the state has reached – and exceeded – the amount of water that can responsibly be diverted from the Bay Delta. As a result, the Council should anticipate future limitations on Delta exports below the level of the 2000-2007 time periods in its Delta plan to meet the Delta ecosystems restoration goals. Those future reductions, at whatever levels they turn out to be, can only be accomplished if consumption levels are simultaneously decreased.

Climate change is likely to reduce the amount of water available from existing surface and groundwater sources; future climate conditions will also reduce the amount of water available for export from the Delta.

Our recommendations to be included in the Draft Delta Plan and DEIR are:

1. In view of the well-recognized over allocation of water supplies from the Delta, the SWRCB should be directed to use their constitutional authority to review and modify all CVP and SWP contracts and water rights to a yield that is historically and predictably achievable and which can be reliably supplied. "Water supply reliability" cannot be defined by the current contract levels or the current level of diversions. (WR P1)

2. The SWRCB should no longer issue permits for increased water diversions or contributions to storage until at least the SWRCB flow criteria have been established, especially in view of the over allocation of supplies from the Delta. (WR R5)

3. The water use reductions and savings shown in our alternatives may make major structural alternatives such as a canal or tunnel through the Delta and further surface storage unnecessary for water supply reliability. Cost savings to the state would conservatively approximate $15 to $20 billion. (WR R6, R7)

4. Direct the Department of Water Resources to regain public control of the Kern Water Bank and dedicate the water supply for the benefit all Californians. (WR P1)

5. The "Urban Preference" must be reinstated in the State Water Project contracts. The "Urban Preference" means that urban water users have priority over agriculture based on the California Water Code: during shortages, people take precedence over agriculture. This was arbitrarily removed from the State Water Project contracts by the Monterey Plus Amendments and needs to be reinstated. The "Urban Preference," combined with returning the Kern Water Bank back as a public asset, will assure that there will be less pressure on the Delta for water as the 2009 legislation requires. The Kern Water Bank can store the "Urban Preference" south of the Delta for times of drought for the 22 million urban users south of the Delta. (WR P1) (Version 2.1.)

6. The pumping of what is referred to as Article 21 “surplus water”, which was put in place by the Monterey Plus Amendments to the State Water Project contracts, has proven so harmful to the fish and the environment that Judge Oliver Wanger required that pumping during the times that this so called "surplus" water was being pumped had to stop. Article 21 of the State Water Project contracts must be amended to reflect this reality. (WR P1) (Version 2.1)

7. The goal of reduced reliance on the Delta can be achieved by increasing groundwater storage facilities south of the Delta. To that end, we recommend that the Council require a complete evaluation of groundwater storage possibilities in the former Tulare lake bed, as advanced by the San Joaquin Valley Leadership Forum. (WR P1)

8. Because of the critical importance of emphasizing a conservation rate structure, it should be implemented sooner than December 2020, as called for in Draft Plan. (WR P1)

9. The Council should require water suppliers to document actual or projected net reductions in reliance on Delta exports as part of their reporting obligations; the reporting obligations should indicate the impact on the total Delta water budget. (WR P1, R3)

10. Establish a more ambitious long-term urban water conservation target, as indicated in our report, *California Water Solutions Now*, to succeed the 20/20 goal. We do not concur with the Draft Plan, which puts the establishment of that future target to some unspecified future date. (WR P1)

11. Establish a statewide agricultural water conservation target of 1 MAF by 2020, 2.5 MAF by 2030 and 3.5 MAF by 2040. (WR P1)

12. IRWMP projects must provide disadvantaged communities with water for health and safety purposes and that meet drinking water standards. (WR P1)

13. The Fifth Draft Plan continues to encourage “groundwater storage” (pp. 87- 98) and “conjunctive management” or “conjunctive use” (pp. 80, 83, 84, 88, 89, 90, 93) without illustrating what conditions must be met to enable ground water storage and/or conjunctive use, whether there are known problems and legal challenges to existing ground water storage and or conjunctive use projects, and whether these possible strategies are appropriate in all hydrologic areas covered by the Delta Plan. We caution

against using sweeping language of possibility regarding ground water storage and conjunctive use when, as the Plan discusses: "…the current status of groundwater management throughout California was unknown (DWR 2003a), and remains so today," (p. 92). In addition, serious impacts from current and historic practices have already altered some ground water basins severely (pp. 91 – 93), so the depth of uncertainty and acknowledgement of past failures should accompany any suggestions of ground water storage and conjunctive use. (WR R7)

14. The Sacramento River is California's largest river, and its watershed's contribution to the State's economy and communities is unquestioned, but it is not invincible to human activities. The Sacramento River and its tributaries have many impaired segments on the 303(d) list, its salmon runs are still struggling to survive, it is home to many more imperiled species, and the farms and communities within its boundaries have significantly stretched its water resources. The State has long looked to the Sacramento River watershed as a solution for escalating demand south of the Delta. An early attempt at conjunctive use in Butte County in 1994 revealed the folly of moving forward with large ground water extractions when so little was (and still is) known about the hydrologic region.

15. Seventeen years later, the Plan's proposed ground water storage and conjunctive use proposals have the potential to cause significant impacts in both the areas of origin and the receiving areas.' As noted above, there remains minimal scientific knowledge regarding the interactions between ground water and surface water and the needs of species in the watershed that California relies upon the most. Yet it is possible that "Fundamental scientific principles (e.g., effective stress and its key role in poromechanical response of an aquifer) have been well understood for decades, and validated predictive modeling of aquifer response is well within the capabilities of modern science and engineering practice," (Mish 2008). The state of hydrological knowledge is sufficient to recommend protective actions on groundwater based on the Precautionary Principle. If ground water storage and conjunctive use remain tools in the Plan's toolbox, we insist that the DSC require the kind of scientific research on aquifer mechanics that Professor Mish explains is not only possible, but common, *prior* to implementation of any new or expanded ground water storage and conjunctive use projects. (WR R7)

16. Attempting to establish conjunctive use and ground water banking in the Sacramento Valley, and expanding efforts south of the Delta, raises serious unanswered questions regarding the risks associated with such exploitive actions that have already devastated the Owens and San Joaquin rivers and valleys. It is helpful that the Plan highlights some of the significant damage from current and past excess ground water pumping and manipulation of hydrologic systems, yet the Plan seeks to use the same practices that created the problems that the Plan seeks to ameliorate. Knowing this, we continue to encourage the Council to consider a new paradigm that is provided in our comments on the Plan's first draft. (WR R7)

17. However, relying on ground water storage and conjunctive use as a significant part of the Delta Plan, the Delta Plan and the Environmental Impact Report must disclose and

analyze the risks associated with these strategies and expound upon the uncertainty. Those risks include (WR R7):

- Hydrogeological Risks
- Water Quality Risks
- Legal Risks
- Financial Risks
- Public Health and Safety Risks

18. The Trinity River is a Delta Tributary Watershed under California Water Code Section 78647.4(b) and is shown in Figure 1 of the Delta Plan. Figure 1 states that the Delta Plan "may affect" other areas of California, including the Trinity River. However, it is clear from the legislative and administrative record that the diversion of Trinity River water is limited to water that is surplus to the needs of the Trinity River basin, which includes the amount of water necessary to meet the federal government's Tribal Trust obligations to protect and restore the fishery resources of the Hoopa Valley and Yurok Tribes. Therefore, the Delta Plan should contain a policy that meeting the co-equal goals of water supply reliability and ecosystem restoration shall not adversely impact the Trinity River, as defined by meeting the flow requirements of the Trinity River Record of Decision[7] and meeting Trinity River temperature objectives contained in the "Water Quality Control Plan for the North Coast Region"[8] by the North Coast Regional Water Quality Control Board.

[7] See http://www.trrp.net/?page_id=72, accessed 9/14/11.

[8] See "Water Quality Control Plan for the North Coast Region" Table 3-1, page 3-8.00, footnote 5, located at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/04_water_quality_objectives.pdf, accessed 9/14/11.

## CHAPTER 5 – RESTORE THE DELTA.

As indicated in the Preface to the Fifth Draft Delta Plan: "California's Delta has long been a battleground for the many competing interests that have a stake in how it is used - and abused….. Conflict over what to do, when to do it and how to pay for it continues to embroil the Delta in controversy." An analysis of the economic and Public Trust values of the Delta, if accomplished on a par with the thoroughness of the Mono Lake case, would resolve much of the current controversy and point to solutions that would have long-term benefits for all Californians.

We were struck by the Palmer, et al 2005 criteria for successful ecosystem restoration, and their first recommendation that was included in the Fourth Draft of the Delta Plan: "The project should be based on a clear guiding image of the type of dynamic and healthy ecosystem to be achieved." We are also struck by the fact that this reference no longer exists in the Plan. Though the 5th draft gives glimpses of what the Council would like to see, there continues to be little definition of what a restored Delta should look like, or when some success is expected. We recommend that the Delta Science Board be tasked with creating measurable criteria of what a "recovered" Delta should look like.

For listed species and species that are key to the livelihood of many communities, commercial, and recreational fishing as an example, this is critical. Neither have unlimited time for restoration work to produce results. In the case of listed species, they survive on the thinnest of threads, and need action sooner than later. Defining what and when improvements are needed, and how that will happen is important. Additionally, there is a priority to what needs to be done, defined by species vulnerability, and we suggest that the Council put in language that requires the Delta Science Program to prioritize actions, with date certain, like that of the SWRCB flow requirements for the Delta and major tributaries. What are the highest priority species, and what actions need immediate funding and action?

1. We agree that development, implementation, and enforcement of new and updated flow requirements for the Delta and high priority tributaries is key to the achievement of the coequal goals. (ER P1)

2. We agree with the dates required for the SWRCB flow recommendations for both the Delta and major tributary rivers. We also agree with the review date in 2013, and ask the Council to be most demanding of the SWRCB to complete these recommendations on time, and if not, to hold to limitations of further water rights authorizations, or other increased authorization for water uses suggested in the two bullets on page 114, lines 1-7. (ER P1)

3. We would recommend adding, "establish an enforceable mechanism to ensure water exports from the Delta and water transfers are consistent with the flow standards established by SWRCB recommendations and, until they are issued, the current Biological Opinions for Delta Smelt and Salmon/steelhead should apply." (ER P1)

4. We agree with the Council's reliance on the Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento

and San Joaquin Valley Regions (DFG 2011). We would recommend that the Council require DFG to fully integrate restoration with inputs from the NMFS and FWS, both for riverine as well as terrestrial habitats. (ER P2)

5. **Additional EWC recommendation:** We ask for upstream recommendations for habitat restoration be made to other agencies that have that ability, as it will bring greater species recovery success and resiliency, and reduce overall in-Delta recovery needs. Water use and diversions north of the Delta, as well as land use decisions, have great influence on the Delta's ability to be supportive of fish and wildlife.

    - As recommended in recent federal biological opinions, evaluations of fish passage around major Central Valley dams connected to the Delta should be conducted in order to determine the possible benefits to endangered salmonid species.

    - The recent NOAA/NMFS decisions and programs to reintroduce salmon above the rim dams as well as the other restoration projects demand that any plans for the Delta consider the effects of pumping on salmonid population migration into and through the delta and on to the upper rivers of the state.

    - Alternative flow schedules that provide colder releases to sustain these fish populations during critical time periods also needs further examination.

6. We appreciate the need to expedite habitat restoration in the Delta, and the prioritization of the areas listed in this section. It is our opinion that listed species do not have time to waste, and acknowledging this through this section is critical to survival and restoration of several listed species on both the Federal and State Endangered Species list. (ER R1)

    - As stated in Chapter 5: "An overarching goal for ecosystem restoration in the Delta Reform Act is to restore fish and wildlife to include more viable and resilient populations of native resident and migratory species." We see no recommendations in this chapter that are specific to the recovery of endangered fish species; **we regard this as a major oversight.** Measurable goals for species recovery need to be included as part of the ecosystems recovery actions. (ER P1, R2)

    - We recommend language and actions which reflect that: "every effort will be made, consistent with the FWS and NMFS recovery plans for listed species, to recover all listed species to viable, self-sustaining populations." Changes in Delta conveyance that would contribute to species extinction are impermissible under the California Endangered Species Act, the Natural Communities Conservation Planning Act, the federal Habitat Conservation Plans as well as Sections 7 and 10 of the Federal Endangered Species Act. (ER R8)

7. The priorities for the Delta Conservancy all appear to be appropriate and necessary. It is appropriate for the Council to make some recommendations on timeframes for

accomplishing each of the listed tasks, or at least request the Conservancy to provide timeframes for each area, and to prioritize the projects based on which will provide the greatest return for listed species. Additionally, some recommendations on how the Conservancy should interface with private landowners and others who have ownership of Delta lands, and could contribute to recovery without land purchase. It is critical that the Conservancy, if they are to be the lead on restoration, identify and work with everyone who can be helpful. (ER R2)

- Delta counties and landowners must be full partners in developing and implementing habitat restoration programs so that a desirable mix of aquatic habitat restoration and sustainable agriculture is achieved. See the previous recommendation related to Governance. (ER P2, ER R1, ER R2)

8. We agree that State and federal fish agencies should complete ongoing negotiations toward a habitat credit agreement with water supply agencies. But with this recommendation, we request that language be put into this section that prevents water supply agencies from receiving increased water supplies based on giving a habitat credit agreement. There should be no opportunity for a quid-pro-quo on water and habitat. (ER R3)

9. The Delta Plan needs to be realistic regarding proposing habitat measures, such as riverine habitat on project levees, since vegetation is not allowed by USACE. (ER R4)

10. **Legacy Stressors -** Though we understand these came from the Delta Independent Science Board, we agree that past impacts cannot be undone, but some can be improved or eliminated in the future. We would hope that several of the listed issues will be addressed and changes made that improve conditions in the Delta.

11. **Current Stressors –** One of the recommendations we have made in all our inputs to the Council is reducing the inflow of selenium and other toxic inflows from primarily the San Joaquin valley. The current CVRWQCB waiver on meeting water quality standards from agricultural lands simply continues this “legacy stressor”. We strongly recommend the Council ask the SWRCB to block the waiver, and work with the CVRWQCB to establish a process for reduction of non-point pollution in the central valley to the level that it is brought into compliance with the state and federal water quality standards, like everyone else in the state must meet. Since toxic inflows were identified as one of the three primary drivers of the pelagic organism decline (POD), it seems more than necessary to deal with its causes as soon as possible. A strong recommendation to the state water board from the Council, with a date certain (like the flow recommendations) seems a reasonable ask.

12. Although we agree that controlling and reducing impacts for invasive species is an important part of improving the Delta, it is also clear that in some cases water management has led to some of these problems. The clam problem in Susuin Marsh is one example. Additionally, there has been much focus lately on Striped Bass because they pray on listed salmonids. It is our opinion that Striped Bass have been part of this

ecosystem since 1879, and are fully integrated into the fabric of the Delta. They are one of California's prized sport fish, and their numbers have gone up and down proportionately with both Delta Smelt and Salmonids. They were present in greater numbers in 2005 when fall run Chinook numbers were close to one million, and were part of the estuary when salmon and steelhead numbers were in the several millions. Additionally, in those times Striped Bass numbers were high as well. We would recommend that invasive species control actions not include Striped Bass.

13. We agree that the Department of Fish and Game should prioritize and fully implement the list of "Stage 2 Actions for Nonnative Invasive Species" with the exception of Striped Bass, discussed above. (ER R6)

14. We agree the workshops would be a good way to engage a wider audience, and develop ways to reduce the stressor impacts. (ER R7)

15. **General Comments on the Bay Delta Conservation Plan -** The BDCP has not defined "greater water supply reliability," but it is well know that the applicants and their contractors are working to remove more water from the Delta System. Additionally, incorporation of the BDCP into the Delta Plan is anticipated if DFG, FWS, and NMFS certify it as meeting their biological standards. We ask the DSC to provide guidance to the BDCP on what is required to meet the legislative mandates of Delta ecosystem recovery, improved water quality in the system for fish and wildlife, as well as the Delta human needs, and the need to factor in the State Water Board's Delta and tributary flow requirements coming in the future.

    The definition of "water supply reliability" is important and can impact economic sustainability of the Delta. The Delta Plan acknowledges multiple strategies or objectives referenced in the Delta Reform Act that must be addressed to improve water supply reliability. A more specific definition of water reliability allows for economic analysis or at least the presentation of factors relevant to economic sustainability. For example, if water reliability is defined as export levels prior to 1970, reduced by the effects of climate change and needs within the watershed, this might represent the average level of exports which could realistically be more reliable. This level had less of an impact on fish populations than the impact of exports from 1970 to 2010. The 1970 level of export is conceivably sustainable with through Delta conveyance and this would have a different impact on economic sustainability than that of expanded exports. Expanded exports utilizing isolated facilities, which has been proposed in the BDCP, would have a footprint that takes farmland out of protection, off local tax rolls and could alter channel flows threatening the salinity of the Delta. These conflicts with the Plan's proposed performance measure in Chapter 8, which states that progress toward improving economic sustainability of Delta land uses and protection of the Delta's agricultural values should be measured by "total agricultural acreage and gross revenue in the Delta (that) will be maintained or increased in the future." A more precise definition of "water supply reliability" could avoid these kinds of conflicts.

- With reference to the Delta Flow Criteria adopted by the State Water Board, the Council should determine specific maximum quantities of water that can be exported under varying water type years and hydrological conditions in order to provide measurable criteria for the goal of "water supply reliability." We cannot manage what is not measured. (ER R8)

16. BDCP is currently developing alternatives for evaluation, focused on alternative conveyance sizing, operations, and level of restoration. We ask the Council to work with the BDCP to help them establish a list of alternatives for evaluation that would likely provide information based on the Council's understanding about **"less reliance on the Delta."**

    - Analyze, or require BDCP to analyze, at an equal level of detail, conveyance facility capacities from 3,000 cfs to 15,000 cfs as well as alternatives that would utilize existing conveyance without major new conveyance facilities. (ER R8)

    - Direct the BDCP to perform a full economic analysis with Public Trust values considered in each of the alternatives they examine. If this is not accomplished by BDCP, the Delta Stewardship Council should have the analyses performed in order to produce a legally compliant EIR. (ER R8)

17. We agree with the recommendation that they complete the BDCP consistent with the provisions of the Delta Reform Act. However, as stated above, this is unlikely to lead to BDCP meeting either the flow requirements or the water quality standards envisioned in the Delta Plan, and as such, likely would not meet the recovery objectives. Since BDCP is a 50 year plan, it must meet the Delta Reform Act mandates, and from a practical sense, the Council must work closely with BDCP on issues like developing alternatives. (ER R8)

    - The purpose of the evaluation of any Delta facility is to decrease the physical vulnerability and increase the predictability of Delta supplies, not to increase Delta diversions. (ER R8)

18. The list of performance measures is a start on narrowing in the requirements for achieving the vision of the Delta Plan. That said, it is a must that these "general" measures become more specific. The listing of the 3 types of performance measures - Administrative, Driver, Outcome - with a listing of issues is a good start to bringing specificity and targets to the process.

19. We would advise that input from the Delta Science Program could be asked to bring more "real time" timeframes to these measures, and at least provide some goals both on "due dates" as well as some numbers for restoration levels. Too many of the issues have no "due date, or target numbers". More specificity brings the process to life. How many resident and migratory fish species? What is a viable population, and how long should it take to achieve it? How many acres restored where and by when? How does adaptive management fit into performance measures? How will adaptive management be done, and how often will evaluation be done on completed projects,

and how will the adaptive management work be applied, and how will change be integrated? Some guidance from the Council needs to be part of the Delta Plan.

- Of course, who pays for what is still a huge question that looms, and must be answered so this actually has legs on the ground.

## CHAPTER 6 – IMPROVE WATER QUALITY.

Nothing is more illustrative of the inherent contradiction between the coequal goals of water supply reliability and ecosystem protection than the discussion and recommendations regarding water quality in Chapter 6 of the Delta Plan. As mass pollutant loadings to the estuary have inexorably increased, residence time, flushing flows to the sea and dilution has substantially decreased. Diversions by the Central Valley Project and State Water Project caused residence time for pollutants in the Delta to increase 100% by 1987.[9] Since then, residence time and pollutant concentration have continued to increase in step with greater exports from the system.

The cumulative and interactive effects of multiple physical, chemical and biological stressors, including discharges of municipal and industrial stormwater and wastewater, agricultural return flows and ubiquitous urban and agricultural chemical application have impaired the Delta's sustainability as a viable habitat for a rich mix of productive species, compromised sources of municipal drinking water, diminished recreational activities and adversely impacted agricultural production. Increased pollutant loading and/or increased quantities of water diverted from or around the estuary will significantly exacerbate existing water quality problems and further impact Delta agriculture, recreation, municipal water supplies and the sustainability of the ecosystem.

California's Porter-Cologne Water Quality Control Act was adopted in 1969. Sections of Porter-Cologne were used as the basis of the federal Clean Water Act, which was adopted in 1972 and amended in 1977 and 1987. The Clean Water Act states that it is the "national goal that the discharge of pollutants into the navigable waters be eliminated by 1985" and it is the "national policy that the discharge of toxic pollutant in toxic amounts be prohibited."

Almost 40 years after adoption of the CWA and Porter-Cologne, virtually every significant water body in the Central Valley, including the entire Delta, is identified as "impaired" and incapable of supporting identified beneficial uses because of multiple pollutants. With the exception of several legacy pollutants, these impairments exist because the chronically understaffed[10] agency

[9] Rozengurt, M., et al. 1987. *"Analysis of the Influence of Water Withdrawls on Runoff to the Delta-San Francisco Bay Ecosystem (1921-1983),"* Technical Report Number 87-7, Tiburon Center for Environmental Studies. May. Page I.7.

[10] The Executive Officer of the Central Valley Board, Ms. Pamela Creedon, acknowledged in an August 2007 presentation to the State Board titled *State of the Central Valley Region* that the Board had only: a) 12% of the staff minimally necessary to regulate stormwater discharges (NPDES), b) 37% of those necessary to control municipal wastewater discharges (NPDES), c) 26% of those necessary to issue WDRs, d) 16% of those required to regulate dairies, e) 22% of the staff crucial to enforcing conditions of the controversial agricultural waivers, and f) only 11 of the 38 people necessary for the basin planning unit to update the Basin Plans that are fundamental to all Board actions. The Board's surface water ambient monitoring program had only 2 person-years (PYs), its enforcement unit was assigned only 3.5 PYs, the water quality certification unit had only 2.6 PYs to process more than 400 certifications annually. Further, the underground storage tanks unit had only 17 of 41 staff needed for several thousand cases, the timber harvest unit had only 9.2 PYs to regulate and monitor discharges from thousands of timber projects covering 45% of the state's harvested timber and the Title 27 unit had only 40% of those needed to regulate leaking landfills and surface impoundments. And finally, the Board had only 16 PYs to develop, implement

charged with implementing water quality statutes has been unwilling or unable to carry out its mandated responsibilities.[11]

Despite the serious and broadly recognized impacts that deteriorating water quality poses to the viability of the Bay-Delta, Chapter 6 calls for no new, meaningful actions to address this threat. Rather, Chapter 6 simply reiterates existing efforts and already-planned initiatives that will do little to reverse the ongoing slide. It requests understaffed agencies to accomplish measures they have been unable or unwilling to do over the last 30 years.

The Water Quality Chapter plays the critical role in the Delta Plan of describing the regulatory and water quality status quo in the vast primary and secondary planning areas covered by the Delta Plan, and then making recommendations to address the uncovered problems.[12] Preventing and addressing pollution at its source is essential to ensuring that people and environment can use water safely and affordably – especially given that water treatment costs regularly exceed the costs of many water pollution prevention measures.

As was discussed in our earlier comments on the Second Draft Delta Plan, State and Regional Water Board impaired waters assessments demonstrate that water body impairments already run broadly throughout the planning area and impair numerous aquatic habitats. We provided further information demonstrating that water quality issues in the Delta and the planning areas are both pervasive and well known.

Below, we reiterate a few of numerous examples of why the Council's approach and recommendations, with respect to water quality, are inadequate, counter-productive, and unlikely to secure improvement in water quality.

## 1. Agricultural Discharges

It is notable and a complete failure that Chapter 6 merely mentions in passing the ineffective Central Valley Regional Water Quality Control Board agricultural runoff waiver, or the utter

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and monitor TMDLs covering over 300 water body/pollutant combinations identified as "impaired" throughout the Central Valley (Note: there are now 730 water body/pollutant combinations identified as impaired and Regional Board staffing levels have been reduced since 2007).

[11] The Central Valley Regional Water Quality Control Board is responsible for issuing 65 municipal wastewater NPDES permits (permitted discharge of 983 million gallons/day, 721 mgd in the Delta), 62 industrial wastewater permits (951 mgd, 480 mgd in Delta) and over 1,100 Waste Discharge Requirements regulating wastewater discharges to land. It is also responsible for issuing more than 90 municipal stormwater permits, approximately 2,000 industrial stormwater permits and some 5,500 construction stormwater permits, as well as regulating over 1,600 dairies, more than 400 other confined animal operations, approximately 400 wetland fill projects annually, discharges from 45% of the state's timber harvest projects and runoff from thousands of irrigated farms spanning more than 6 million acres in the Central Valley.

[12] As noted in the Notice of Preparation, the Delta itself plus the Watershed of the Delta, and areas tributary to the Watershed, span a wide swath of the central part of the state. Delta Stewardship Council, "Notice of Preparation: Draft Environmental Impact Report for the Delta Plan," Figure 1: Proposed Planning Area for Delta Plan Environmental Impact Report," p. 12 (Dec. 10, 2010), available at: http://www.deltacouncil.ca.gov/docs/DSC_Notice_of_Preparation_120910.pdf.

lack of any regulatory controls at all on agricultural runoff within the San Francisco Bay Area Regional Water Board purview. After 28 years of "conditional waivers," the Central Valley Regional Board cannot identify who is actually discharging, what pollutants are being discharged, the localized impacts to receiving waters, whether management measures are being implemented or if implemented management measures are effective in reducing pollution. This failure reinforces the gross inadequacies of this chapter in addressing water quality problems in the Delta. (WQ R1, R5, R6)

Irrigated agriculture is the largest source of pollution and impairment in the Central Valley, responsible for 57% of impairments where sources are identified and almost 80% of identified sources that can be reasonably regulated and controlled. By contrast, urban runoff is only identified as causing impairment to less than 12% of known sources of impairment.[13] The only region-wide assessment of data collected at 313 sites by U.C. Davis and the agricultural coalitions, pursuant to the Irrigated Lands Program, reveals epidemic pollution.[14] The Council should consult the State Water Board's recent report to the Legislature on data and strategies for reducing agricultural pollution runoff into the Delta, as well as a detailed summary of existing Delta agricultural regulatory programs.[15] Among other things, the report finds that "over 60 percent of the exceedances of water quality objectives we have identified occur during the

[13] See State Board's *2010 Integrated Report Clean Water Act Section 303(d) List / 305(b) Report* that was submitted to U.S EPA in August 2010. Category 5 (impairments requiring development of a TMDL) and Category 4A (impairments being addressed by USEPA approved TMDLs) identify some 730 pollutant/water body impairments in the Central Valley. Agriculture is identified as the source of 269 pollutant/water body segments covering 1,572 waterway miles and 96,147 acres of open water. Sources of impairment to 257 pollutant/water body segments remain unidentified. However, it is likely that agriculture will ultimately be identified as causing or contributing to many, if not most, of these impairments, as the pollutants or causes are closely linked to agricultural areas and activities.[13] The largely intractable source of resource extraction caused by legacy mining is identified as causing 257 pollutant/water body impairments. Urban runoff is identified as causing 55 impairments. Invasive species, hydro-modification, recreation, construction and historic land management are responsible for approximately 2.7% of impairments. The State Board report can be found at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

[14] Central Valley Regional Water Quality Control Board, *Irrigated Lands Conditional Waiver Program: 2007 Review of Monitoring Data*. The report revealed that: 1) toxicity to aquatic life was present at 63% of the monitored sites (50% were toxic to more than one species), 2) pesticide water quality standards were exceeded at 54% of sites (many for multiple pesticides), 3) one or more metals violated criteria at 66% of the sites, 4) human health standards for bacteria were violated at 87% of monitored sites and 5) more than 80% of the locations reported exceedances of general parameters (dissolved oxygen, pH, salt, TSS). While the adequacy of monitoring (i.e., frequency and comprehensiveness of monitoring) varied dramatically from site to site, the report presents a dramatic panorama of the epidemic pollution caused by the uncontrolled discharge of agricultural wastes. *See, e.g.*, Letter from California Sportfishing Protection Alliance to Central Valley RWQCB, "California Sportfishing Protection Alliance Comments on Draft Irrigated Lands Regulatory Program - Program Environmental Impact Report" (Sept. 27, 2010), p. 51, available at: http://calsport.org/doc-library/pdfs/31.pdf. The Report itself can be found at http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/staff_monitoring_data_analysis/2007_monitoring_data_report/index.shtml

[15] SWRCB and Central Valley RWQBC, "Report to the California State Legislature Joint Legislative Budget Committee on Reduction of Agricultural Pollution Runoff into the Sacramento-San Joaquin Delta" (Dec. 2010) (Report to Legislature), available at: http://www.cacoastkeeper.org/document/report-to-legislature-on-delta-agricultural-pollution.pdf/ (Table 2, page 13 of the report provides a summary of existing Delta agricultural regulatory programs; this summary is expanded in the report's Attachment 1).

irrigation season;"[16] the Report then demonstrates the impacts of this finding through a summary in Table 1[17] (inserted below) of the significant agricultural contributions to water quality exceedances. The Report provides an expanded analysis of this summary information in its Attachment 2 ; such information should be carefully reviewed and included as appropriate.

**Table 1**
AGRICULTURAL CONTRIBUTIONS TO WATER QUALITY EXCEEDANCES IN AGRICULTURALLY DOMINATED WATERWAYS IN THE SAN JOAQUIN RIVER WATERSHED AND SOUTH DELTA

| | Water Body/Pollutant Exceedances | | | | |
|---|---|---|---|---|---|
| Parameter Category | Total Count | Irrigation Season | Non-Irrigation Season | Programs to Address | Goal date for Full attainment of Beneficial Uses |
| ***Agricultural Practices Likely Cause or Contribute to the Problem*** | | | | | |
| TDS/Electrical Conductivity | 668 | 58% | 42% | ▪ San Joaquin Salinity and Boron TMDL<br>▪ CV Salts | 2014 - 2026<br>Under Development |
| Pesticides | 208 | 72% | 28% | ▪ San Joaquin River and Delta Diazinon and Chlorpyrifos TMDLs<br>▪ Irrigated Lands Regulatory Program | 2010 - 2011<br>2011 - 2019 |
| Legacy Pesticides | 139 | 82% | 18% | ▪ Irrigated Lands Regulatory Program (addressing through sediment control)<br>▪ Legacy Pesticide TMDL | 2011 - 2019<br>Under Development |
| Toxicity, Sediment, Scud (Hyalella) | 73 | 62% | 38% | ▪ Sediment Quality Objectives | Under Development |
| Toxicity, Water Column, Water Flea (Ceriodaphnia dubia) | 63 | 69% | 31% | ▪ Irrigated Lands Regulatory Program | 2011 - 2019 |
| Nutrient | 34 | 69% | 31% | ▪ Irrigated Lands Regulatory Program<br>▪ Dairy Program | 2011 - 2019 |
| Selenium | 2 | 33% | 67% | ▪ San Joaquin River Selenium TMDL | 2010 |
| ***Agricultural Practices that Potentially Cause or Contribute to the Problem*** | | | | | |
| E. Coli | 611 | 59% | 41% | ▪ Irrigated Lands Regulatory Program<br>▪ Dairy Program | 2011 - 2019 |
| Dissolved Oxygen | 530 | 69% | 31% | ▪ Irrigated Lands Regulatory Program<br>▪ Stockton Deep Water Ship Channel TMDL | 2011 - 2019<br>2011 |
| Toxicity, Water Column, Algae (Selenastrum) | 95 | 57% | 43% | ▪ Irrigated Lands Regulatory Program | 2011 - 2019 |
| ***Uncertain Agricultural Contribution*** | | | | | |
| Metals | 411 | 63% | 37% | ▪ Irrigated Lands Regulatory Program | 2011 - 2019 |
| pH | 131 | 69% | 31% | ▪ Irrigated Lands Regulatory Program | 2011 - 2019 |
| Toxicity, Water Column, Fathead Minnow (Pimphales Promelas) | 21 | 52% | 48% | ▪ Irrigated Lands Regulatory Program | 2011 - 2019 |

8

The Central Valley Regional Water Quality Control Board Irrigated Lands Regulatory Program, referenced extensively in the SWRCB Report to the legislature but essentially ignored in Chapter 6, has also produced a wealth of water quality data. In Attachment I, we provide a summary of just some of the findings of two recent reports from this effort that should be considered in developing the final Chapter 6. (WQ R1, R3, R5)

An additional missing discussion is on the cumulative impact of mixtures of contaminants on Delta health, particularly pesticides. For example, the Delta Independent Science Board's recently released Delta Stressors Memo[18] highlights pesticide pollution as a key Delta stressor, with contamination from pesticides currently killing fish and degrading ecosystems even at low and legal concentrations. For example, a study by NOAA and Washington State found that five of the most common pesticides used in California and the Pacific Northwest – diazinon,

[16] *Id.* at 2.
[17] *Id.* at 8.
[18] Memorandum from Delta Independent Science Board to Delta Stewardship Council, "Addressing Multiple Stressors and Multiple Goals in the Delta Plan," Attachment 2, p. 4 (Jan. 26, 2011), available at: http://deltacouncil.ca.gov/delta_science_program/isb/isb_meetings.html (highlighting "pesticide release" from agriculture, industry and residential use as a current Delta stressor).

malathion, chlorpyrifos, carbaryl, and carbofuran – act in "deadly synergy" by suppressing an enzyme that affects the nervous system of salmon.[19] Even where exposures to a single chemical did no harm, pairing chemicals lowered enzyme activity, sometimes fatally. Scientists concluded, "[s]ingle-chemical risk assessments are likely to underestimate the impacts of these insecticides on salmon in river systems where mixtures occur." In other words, the above research and numerous other studies[20] demonstrate that even if current laws are implemented fully, they will fail to protect fish, because the standards on which they are based are too low. Unfortunately, as is well-known, many Delta and planning watershed waterways do not even meet current, inadequate, standards, and are in fact significantly polluted, in many cases well above standards. (WQ R8, R9)

Significantly, none of the suggestions in Chapter 6 include the overhaul of the current, weak Central Valley Irrigated Lands Regulatory Program, which has failed, and will continue to fail without significant modifications, to protect the health of the Bay-Delta Estuary. Indeed, under "Policies" on page 148, the Plan incredibly states "No policies with regulatory effect are included in this section." The inadequacies of the existing Central Valley Irrigated Lands Regulatory Program have been exhaustively documented.[21] We recommend that the Delta Plan specifically address those inadequacies and recommend changes outlined by NGOs, including the following:[22] (WQ R5)

- Individual Growers Covered; Not Third Parties: Individual growers would apply for coverage. No third-party applications would be authorized.
- Farm Water Quality Management Plans (FWQMPs): Growers would be required to develop and implement individual FWQMPs in order to minimize discharge of waste to groundwater and surface water from irrigated agricultural lands.
- Tiered Approach: Fields would be placed in one of three tiers based on their threat to water quality. The tiers represent fields with minimal (Tier 1), low (Tier 2), and high (Tier 3) potential threat to water quality. The tiers would be used to adjust the monitoring requirements, assist the dischargers in determining the level of management measures

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[19] Laetz, Cathy, *et al*, "The Synergistic Toxicity of Pesticide Mixtures: Implications for Risk Assessment and the Conservation of Endangered Pacific Salmon," *Environmental Health Perspectives*, Vol. 117, No. 3 (March 2009), available at: http://www.eenews.net/public/25/9960/features/documents/2009/03/03/document_gw_01.pdf

[20] Casillas, E., *et al*, NOAA-NMFS-NWFSC, **"Estuarine Pollution and Juvenile Salmon Health: Potential Impact on Survival" (2007), available at:** http://www.nwfsc.noaa.gov/publications/techmemos/tm29/papers/casillas.htm**;** Scholz, Nat, NOAA, "Health effects of pesticide mixtures: Unexpected insights from the salmon brain," (AAAS Annual Meeting, Feb. 2008), available at: http://www.eurekalert.org/pub_releases/2008-02/nh-nsa_1021208.php; *see also* NOAA Office of Communications, "New findings on emerging contaminants: Chemicals in our waters are affecting humans and aquatic life" (AAAS Annual Meeting, Feb. 2008), available at: http://www.eurekalert.org/pub_releases/2008-02/s-nfo020808.php.

[21] *See, e.g.*, Letter from California Sportfishing Protection Alliance to Central Valley RWQCB, "California Sportfishing Protection Alliance Comments on Draft Irrigated Lands Regulatory Program - Program Environmental Impact Report" (Sept. 27, 2010), p. 51, available at: http://calsport.org/doc-library/pdfs/31.pdf.

[22] *Id.*

necessary to meet BPTC, and assist the Regional Board in prioritizing enforcement inspections.

- Non-Water Quality Monitoring: All growers would conduct nutrient tracking, pesticide tracking, and implemented tracking of management practices.
- Surface Effluent Quality Monitoring: Within areas where Coalitions are currently required to prepare and implement a management plan, all Tier 2 and 3 farms within that management area that are discharging any pollutant which triggered the management plan, must prepare and implement a discharge monitoring plan for the pollutants governed by the management plan as well as basic parameters that serve as indicators of pollution discharges.
- Groundwater Monitoring: Growers who qualify as Tier 2 or Tier 3 for groundwater pollution should be required to conduct individual monitoring annually as described for the Tier 3 groundwater growers in the PEIR.
- Additional Fee Authority: The State Board must increase current fees to cover all of the costs of the program. It is unreasonable to base a regulatory program regulating the largest source of pollution to Central Valley waters on the political reluctance of the Board or Administration to assess appropriate fees to support a regulatory program that is capable of enforcing statutory and regulatory requirements. The fees for the irrigated lands dischargers, as well as fees on existing NPDES permittees, including stormwater permittees, should also be adjusted to accommodate a separate regional monitoring program.

**2. Discharges of Municipal and Industrial Wastewater**

Chapter 6 briefly references permits issued pursuant to the National Pollutant Discharge Elimination System (NPDES) and "encourages" the timely development and enforcement of the program without inquiring whether or not the program is working as intended. It's not. Resource constraints and pressure from the regulated community have undermined the integrity of the NPDES permitting program.

Almost two billion gallons per day of wastewater is discharged into the Delta watershed (1.2 BGD in the actual Delta) from some 64 municipal wastewater treatment plants and 62 industrial dischargers. The Central Valley Regional Board is allowing flow limits and, in many cases, the mass loading of pollutants to be increased in many, if not a majority, of NPDES permit renewals. Frequently, these renewed permits allow for increases in loading of pollutants identified as actually "impairing" a water body. For example, in recent years, the Central Valley Regional Board has allowed increased loading of impairing pollutants into the Delta from Stockton, Manteca, Tracy, and Lodi, among others, and even issued a new permit to the municipality of Mountain House to begin discharging impairing pollutants into Old River; one of the most degraded areas of the Delta.

State and federal antidegradation requirements are routinely ignored and, consequently, the Regional Board has little idea of the total mass loading of pollutants in a watershed. For example, the Regional Board issued a permit granting Linda County Water Agency all of the remaining assimilative capacity for salt in the Feather River. Subsequently, Yuba City was granted the same assimilative capacity in their permit renewal.

It is well known that numerous constituents interact additively and synergistically. Many of these interactions are well documented in the scientific literature. Yet, the Regional Board doesn't consider these interactions in developing permit limits.

Under pressure to get NPDES permits issued, the Regional Board has embraced cookie-cutter templates and out-sourced much permit development to individuals far removed from California who are not professional engineers and who frequently lack an understanding of local conditions. NPDES permits issued by the Regional Board now routinely ignore and violate explicit state and federal regulations governing permit issuance and, consequently, are not protective of surface waters and beneficial uses. Attached is an evaluation of the failure of the Regional Board to comply with fundamental permitting regulations.

The Council should recommend that the Legislature increase funding to the water boards to ensure that they have adequate resources to comply with their NPDES permitting mandates. We also strongly urge the Council to recommend that the Regional Board fully comply with NPDES permitting regulations, including antidegradation requirements, and that it address additive and synergistic interactions in developing permit limits. The Council should further require the Regional Board to prepare pollutant specific mass load estimates for the Delta and tributary watersheds and documented estimates of progress should be provided to the Council on a yearly basis.

### 3. Municipal Stormwater Discharges

Chapter 6 fails to acknowledge or discuss the failure of the municipal stormwater program to reduce mass loading of toxic and impairing pollutants. Examination of stormwater monitoring reports reveals that most stormwater discharged routinely exceeds water quality criteria and is frequently toxic to aquatic life.

Not a single municipality discharging stormwater pollutants into the Delta or its tributaries can document or quantify reductions in the mass loading of pollutants over the last twenty years. Nor has the Central Valley Regional Board incorporated enforceable TMDL waste load allocations developed in TMDLs in recently issued MS-4 permits.

The Council should recommend that the State Water Resources Control Board and the Central Valley Regional Board adopt limits in municipal stormwater permits restricting increases in the mass loading of pollutants. The water boards should provide the Council with a yearly documented update on progress in reducing the concentration, toxicity and mass of stormwater

discharged pollutants, as well as, documentation that enforceable waste load allocations are being included in TMDLs.

**4. TMDLs**

Chapter 6 focuses much of its discussion, many of its recommendations and a number of its performance measures on the completion of TMDLs. Table 6-1 identifies 27 TMDLs approved and under development in the Central Valley, Delta, and Suisun Bay, and is indicative of the paucity of the Delta Plan's approach to water quality. The identified TDMLs are only the tip of the iceberg; State and Regional Boards are legally obligated to develop and approve literally hundreds of TMDLs.

With several exceptions, the TMDLs in the table address problems that were amply extensively identified 20, 30, even 50 years ago. For example, the pervasive toxicity of diazinon and chlorpyrifos in the San Joaquin River were identified in the late 1980s, low dissolved oxygen in the Stockton Deep Water Channel was chronicled in the early 1960's, and factors causing excessive salinity in the San Joaquin River were documented far earlier. A long string of programs, MOUs, Basin Plan amendments, legislatively mandated Toxic Hot Spot cleanup plans, and toothless waivers litter the historical landscape but the problems continue to plague the Delta and tributary waterways. TMDLs are only the latest programmatic rabbit-hole to avoid the repercussions that would accompany timely direct action.

TMDLs do not ensure compliance with Basin Plan water quality standards. While the "technical TMDLs" adopted by the Central Valley Regional Board tend to be scientifically defensible, crucial implementation plans are sadly lacking. To date, there have been few, if any, documented and quantified reductions in pollutant loading attributable to TMDL implementation. Reduction in loading of organophosphorus pesticides was the result of growers switching to less expensive and more potent chemicals, for which there is little monitoring and no TMDL under development. Treatment plant upgrades in Stockton resulted in reduced ammonia loading to the Stockton Ship Channel but the largest identified sources of low dissolved oxygen remain unaddressed. Although the Grasslands Bypass Project has reduced selenium loading to the San Joaquin River, selenium concentrations in the San Joaquin River continue to routinely exceed the 5-microgram limit at Hills Ferry and the 2-microgram limit in wetland and refuge water supply channels. Existing water quality standards are inadequate and the US Geological Survey (USGS) has concluded that standards may have to be reduced 5 to 50-fold to be protective of aquatic and avian life. Having secured the low hanging fruit, remaining technical obstacles are enormous and uncertain and any solution will cost hundreds of millions of dollars that are not likely to become available.

The poster child for the failure of the TMDL program is the San Joaquin River Salt and Boron TMDL. Salinity problems on the river have been recognized for over a century. Operation of the CVP and SWP exacerbated conditions by importing an estimated 700 thousand tons of salt

annually into the San Joaquin Valley. Some 400 thousand tons of salt migrate to groundwater. Much of this salt enters the San Joaquin River via accretion or direct discharge. The TMDL has been characterized as the first 100-foot TMDL in the nation's history, only protecting a short stretch of river below the San Joaquin's confluence with the Stanislaus River. Water quality violations continue to occur upstream of the confluence and immediately downstream: this despite the fact that EPA regulations and the Central Valley Board's Basin Plan require that standards must apply throughout a water body, not simply at a single compliance point. While TMDL implementation plans must ensure attainment of water quality standards, the salt TMDL contemplates a 19% exceedance of standards in critical years and a 7% exceedance in dry years. The TMDL fails to reserve any assimilative capacity, thus depriving downstream farmers of the ability to legally irrigate and discharge return flows. Although the State Water Board has expressly and repeatedly directed the Regional Board to move the salt compliance point upstream, it has failed to do so.

Even where TMDLs have been adopted they may not be protective. For example, the Methylmercury TMDL is not protective of subsistence fishermen and their families, or those with impaired immune systems, pregnant women, or children.

It is not enough to simply measure progress in protecting water quality by programs initiated or TMDLs completed. We recommend that the Council condition approval of covered actions on inclusion of enforceable implementation plans in TMDLs, including performance measures and interim yardsticks with specific quantifiable load reductions. This should apply to all sources of impairing pollutants, including municipal and industrial stormwater and wastewater and irrigation return flows.

Water bodies must be identified under Clean Water Act Section 303(d) as "impaired" due to low flows, rather than just chemical or biological pollution, so that flows are carefully considered in all Total Maximum Daily Loads later developed to restore the water bodies to health. However, this has yet to be accomplished in the Central Valley Region. As described in extensive comments that were submitted by a coalition of groups, the state must identify and restore water bodies impaired by altered flows, as required by the Clean Water Act.[23] This should be a specific recommendation added to the Plan to begin to ensure its effectiveness. (WQ R8, R9)

### 5. Grasslands Project and Selenium

It is notable in Table 1 above that selenium is the only pollutant in which water quality objectives are violated more often during the non-irrigation season. This is indicative of the pervasive selenium pollution of the shallow aquifers of the Western San Joaquin Valley

[23] Letter from California Coastkeeper Alliance *et al*. to State Water Resources Control Board, "Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report" (Aug. 30, 2010), available at: http://www.cacoastkeeper.org/document/ccka-comments-on-2012-303%28d%29-list.pdf. This letter also provides relevant discussion regarding the Clean Water Act requirements to address impaired groundwater that may be threatening hydrologically connected surface water.

mobilized during the wet winter months. The 2010 goal of meeting selenium water quality objectives has passed and the Central Valley Regional Board has extended the time for compliance until the end of 2019, justifying the action because no solution exists. If the BDCP as currently proposed is implemented, a greater percentage of Bay-Delta water will come from the San Joaquin River. As a result, Bay-Delta selenium concentrations and residence time will increase with predictable disastrous biological impacts.

On September 2011, US EPA released scientific documents by the US Geological Survey documenting the existing Bay-Delta selenium water quality standard of 5 micrograms is inadequate to protect Bay-Delta fish and wildlife. The EPA documents provide the basis for changing this toxic standard to a selenium water quality standard of 1 microgram or less. This change is needed to protect economic resources of the Delta Estuary and Bay including salmon, steelhead, sturgeon, and diving birds, and should be a recommendation in the Delta Plan.

Furthermore, the just released Reclamation water quality monitoring reports for the Delta Mendota Canal adjacent to the Mendota Pool on the San Joaquin River confirm selenium violations for five months out of the first six months of 2011. This source water goes to thousands of acres of wildlife refuges, duck clubs, and wetlands in the San Joaquin Valley and is upstream of the Delta. Failure to address this water pollution and monitor the sources has been ongoing for years. The Delta Plan should recommend that the Central Valley Regional Board enforce selenium water quality standards for agricultural polluters.

Reclamation confirms that the west side drainers are no longer monitoring selenium and other pollution that is being discharged into the San Joaquin River below Crows Landing near the Merced River, nor is this pollution being monitored as it travels to and through the Bay-Delta. The Delta Plan should recommend a comprehensive selenium-monitoring program for the Bay-Delta estuary and lower San Joaquin River.

The Bay-Delta Conservation Plan's goal to provide increased water supplies to the heavily subsidized poisoned ground of the Western San Joaquin Valley will further contaminate our fish, wildlife, food, and water supplies with toxic amounts of selenium. Ceasing irrigation of these toxic lands will reduce costly public water, power, and crop subsidies, improve water quality, and decrease the demand for pumping from the Delta. There is no cost effective or technically viable solution other than to stop sending clean water from Northern California and the Sierras to poisoned ground. The Delta Plan should recommend retirement of lands from irrigated agriculture, which creates selenium contamination to the tributaries and aquifers that drain into the Bay-Delta.

Given that no selenium solution exists other than land retirement, the Delta Plan should include a recommendation that the SWRCB convene a Wasteful and Unreasonable Use hearing to revoke water permits used for the irrigation of seleniferous, saline lands which degrade Bay-Delta water quality. The Draft Plan gives the impression that this problem is solved. After a quarter of a

century of studies and legal maneuvering, selenium and other pollutants mobilized by irrigation of the toxic lands of the Western San Joaquin Valley are still not solved.

**6. Inadequate or Lack of Protective Water Quality Standards**

Many thousands of unregulated chemicals, including pharmaceuticals and personal care products, industrial chemicals, and other potentially hazardous chemicals, are discharged to waterways, including the Delta and its tributaries. Chapter 6 briefly acknowledges the potential toxic and sub lethal impacts from the maelstrom of emerging and industrial chemicals that gather together in the Delta. It's likely that the synergistic and additive interactions of constituents acting on the immune, endocrine, and reproductive systems of aquatic life pose a greater threat to pelagic species than overt toxicity. The Council should do more than simply recommend that the State and Regional water boards conduct special studies of selected emerging contaminates by 2014, it should make the funding and implementation of aggressive suite of such studies a condition of approval of covered actions.

Existing water criteria fails to address many issues that must be considered in considering impacts on aquatic life. For example, during the State Water Board's Delta flow hearing, Dr. G. Fred Lee testified:

> "The current US EPA criteria development approach only considers some and in some cases a small part of the impacts of chemical contaminates on aquatic life. For example, the approach currently used to develop water quality criteria does not include additive/synergistic properties of regulated chemicals that occur in concentration below the water quality criteria allowing unanticipated adverse impacts to aquatic life. Adverse impacts of chemicals to aquatic life that occur for especially sensitive species, such as zooplankton which serve as fish food organism were not included in the development of the water quality criteria. These criteria are only applicable to protecting about 90% of the species. Therefore there could readily be fish species in the Delta and its tributaries that are more sensitive to a chemical than those used to establish the water quality criterion value. There is also very limited information on chronic exposure to sub lethal impacts of a chemical and mixtures of chemicals to fish populations. Another issue is that other stressor such as low DO, ammonia etc. that can impact the lethal and especially sub lethal impacts of chemicals. It has been well known for over 40 years through biomarker studies that fish and other organisms show organism biochemical responses to chemical exposures at concentrations well below the water quality criterion. The significance of these biomarker responses to an organism or group of organisms is largely unknown. Chemicals can adversely impact the health of the fish and other aquatic life that weaken their ability to resist adverse impact of stressors such as low DO, elevated

temperature and predation as well to disease. It's been known for over 40 years that very low levels of copper affect the "breathing" rate of some fish.[24]

Developing more protective water quality standards is likely to be technically difficult, expensive and time consuming. More immediate benefits are likely to be achieved by reductions in the mass loading of pollutants to surface waters. We reiterate our previous recommendation that the Council should require the Regional Board to prepare pollutant specific mass load estimates for the Delta and tributary watersheds and documented estimates of progress should be provided to the Council on a yearly basis.

Chapter 6 notes that there are impairments in the Delta that are caused by total organic carbon, nutrients and other contaminates for which there are no federal or state water quality criteria. We recommend that the Council go farther than simply recommending that the water boards develop and adopt criteria for nutrients by 2014 and make the adoption of criteria a condition of approval of covered actions.

Recommendation 9 calls on the Water Boards to "conduct or require special studies of pollutants including selected emerging contaminants." However, this Recommendation fails to note how this effort would be different than the review already being conducted by the State Board and its contractors.[25] Furthermore, there is no mention of utilizing existing monitoring results as a foundation for preventative actions and enforcement of existing standards to prevent further degradation of drinking water supplies, higher treatment costs, and damage to ecosystem habitat, and preventing harm to other beneficial uses. A meaningful Recommendation would have considered the work already being undertaken, evaluated it for potential weaknesses, and provided useful guidance on where additional work is required. (WQ R9)

Of the approximately 100,000 chemicals registered for use in the United States, only about 200 are regulated with respect to water quality. The Priority Pollutant List is an artifact of a legal settlement several decades ago, has never been peer reviewed and is an inadequate surrogate for the maelstrom of chemicals found in our waterways today. Further, degradants, a product of chemical breakdown in the environment, are little understood but are often highly toxic. We recommend that the Council urge U.S.EPA and the State and Regional Water Boards to upgrade the Priority Pollutant List through a scientifically defensible process.

## 7. Drinking Water Quality

We support recommendations WQ R1, WQ R3, and WQ R4 and take no position on WQ R2. We believe that WQ R5 (CV-SALTS) while an interesting concept, will cost many billions of

[24] Lee, G. Fred. 2010. Comments on Water Quality Issues Associated with SWRCB's Developing Flow Criteria for Protection of the Public Trust Aquatic Life Resources of the Delta, 11 February 2010. Page 3. Available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/exhibits/cspa/cspa_exh22_lee_test.pdf

[25] *See* http://www.sccwrp.org/ResearchAreas/Contaminants/ContaminantsOfEmergingConcern.aspx.

dollars and is serving as a rabbit-hole to justify a failure to pursue imposition of regulatory requirements and numerous near-term efforts that would result is significant reductions of salt loading. Effective regulatory enforcement would likely be more effective in achieving significant near-term reductions of salt loading. We recommend the Council add quantitative yardsticks to this recommendations and condition approval of covered actions on compliance with those yardsticks.

Other aspects of the Drinking Water Quality section of the plan are inadequate. While we appreciate the paragraph referring to the problem of nitrate contaminated drinking water for low-income communities, no connection is made between this observation and the larger issue of controlling salinity. The section also ignores the problem of nitrates for large communities, particularly in the North Valley. Both Ripon and Modesto, for example, report having to close several wells due to nitrate contamination in the last 10 years, and both are either using or seeking surface water to supplement the lost yield. The Delta Plan must establish a clear connection between water supply and water quality and again specify quantitative yardsticks to measure progress.

**8. Lack of Timetables, Yardsticks, Performance Measures, and Consequences**

Given the extensive information on pollution impacts in the Delta, a credible Delta Plan must provide the yardsticks to evaluate progress (including mass loading reductions), end points, and citizen enforcement tools to hold all polluted discharges to account, and provide consequences for failure. Chapter 6 fails to do this. Rather, it simply restates existing efforts and suggests (without mandates or accountability) future efforts that may or may not be undertaken. For example, WQ Recommendation 6, the first Environmental Quality recommendation, simply references the fact that the State and Regional Boards "are currently engaged in regulatory processes, research, and monitoring" and recommend only "these ongoing efforts be completed and if possible accelerated."

The Delta ecosystem and beneficial uses that the estuary supports cannot be restored without compliance with water quality standards. Monitoring results need to trigger automatic actions prior to violating the standards to prevent irreversible ecosystem damage and degradation of beneficial uses. (WQ R1)

Specific quantifiable timetables, yardsticks, performance measures, endpoints, and consequences for failure are the necessary drivers of any meaningful plan that realistically expects to achieve the coequal goals and improve water quality. We recommend that the Council recommend inclusion of these specific measures in all programs and projects related to salinity, drinking water quality, and environmental water quality and condition approval of covered actions on their inclusion. This should apply to all sources of pollutants including point and nonpoint discharges.

## CHAPTER 7 – REDUCE RISKS IN THE DELTA.

In general, the Fifth Draft Delta Plan contains a number of good policies and recommendations to reduce Delta flood risks that we agree will be beneficial. What is needed is a partnership with local, state, and federal agencies to reduce flood risks.

1. The planning, implementation, monitoring, and evaluation of all Delta levee and floodplain improvements shall include consultation and maximum feasible participation by those living in the Delta. (RR R1 thru R12)

2. The Council should require the PL 84-99 levee standard (Class 3 in Table 7.1) or higher classes of levee standards contain a 22-foot crown width as a minimum for all delta levees. A 22-foot crown width in lieu of the 16-foot crown is recommended as a means to accommodate raising levees to meet sea level rises greatly in excess of the rates experienced in the last 300 years and to allow two-way passage of trucks in the event of a flood. The Delta Plan should identify levees that don't meet PL 84-99 criteria and develop a plan for reviewing them to determine whether they should be improved and improving the selected levees during a phased timeline. (RR R4)

3. The Delta Stewardship Council should accept and support as a covered action in the Delta Plan the Delta Protection Commission's recommendation in their Economic Sustainability Plan to: "Improve many core Delta Levees beyond the PL 84-99 standard that addresses earthquake and sea-level rise risks, improve flood fighting and emergency response, and allow for vegetation on the water side of levees to improve habitat. Improvement of most core Delta levees to this higher standard would cost $1 to $2 billion. While this is a longer-term program, planning should be initiated immediately."[26] (RR R3 thru R7)

    - There is a plausible public interest in providing public funds to Delta reclamation districts and other Delta interests for levee upgrades because the Delta serves as the water conveyance facility for much of California. Water exporters should be required to identify which levees, if any, ***they want to fund to a higher standard*** (for example more earthquake resistant) to protect their water supply, beyond the current standards. Recommendations should also include assisting Delta counties and communities in meeting FEMA/NFIP programs. The plan should also contain a recommendation to support and increase public funding for permanent continuation of existing and highly successful statutory cost-share formula and funding for Delta (Subventions) Levee Program. Public safety and flood protection must remain the top priority of the State Plan of Flood Control, including its levees and bypasses. (RR R# thru R7)

    - Because earthquake risks to the levees are one of the main justifications for a Peripheral Canal or Tunnel in the Delta, and there is evidence that the earthquake risks to the Delta levees may have been exaggerated in previous drafts of this report,

[26] Delta Protection Commission. Second Draft Economic Sustainability Plan, July 21, 2011. Chapter 11, Page 222. http://www.delta.ca.gov/res/docs/ESP%20(2)%20Ch%2011.pdf

the comparison of costs of the two alternatives ($1-2 billion for levee strengthening versus $15-$16 billion for new conveyance) is significant and should be incentive enough to immediately initiate this levee reinforcement program and make catastrophic levee failure a questionable justification for new conveyance. The comment "Delta levees are fragile' may be refuted by the fact that there has been a reduction in the number and severity of Delta levee failures since 1988. (RR R5)

4. We concur with the Policies shown in this Chapter (RR P1 thru RR P4)

5. We agree that there should be support for Delta dredging to improve flood conveyance and to provide material for levee maintenance or subsidence reversal in the Old River, Middle River and the South Fork Mokelumne. However, we have concerns about the environmental impacts from deepening the Sacramento Deepwater Ship Channel and the Stockton Deepwater Ship Channel and we reserve judgment pending comprehensive environmental review and full mitigation. (RR R2)

6. We agree in general with the concept of identifying lands that will be needed for flood control improvements including setback levees. We also agree with the importance of identifying and setting aside these lands. However, the locations for flood control improvements have yet to be identified which creates uncertainty in land use decisions and in the absence of that knowledge, private and public land use decisions may foreclose opportunities for flood control improvements in the future. Until these decisions are made, it creates burdensome uncertainties for Delta residents and communities. Therefore we urge the Delta Stewardship Council to identify these areas sooner rather than later in order to provide land use certainty to residents and local government. (RR R4)

7. We agree that the Delta Stewardship Council should convene a working group to develop and evaluate recommendations to DWR to address appropriate actions to both routine and catastrophic levee failure. We also recommend that the working group include development of recommendations for local Delta agencies as well. (RR R7)

8. We partially agree with the recommendation for termination of state leases on Delta lands subject to subsidence. However, every effort should be made to work with farmers to keep Delta lands in agricultural production. The purchase by the State and non-profits of Delta islands such as Twitchell and Sherman and elimination of agricultural activities in some of those areas negatively impacts the Delta economy. Termination of state leases should be a last resort if a farmer is completely unwilling to participate in practices and programs to halt or reverse subsidence on Delta islands. In the event a lease is terminated, every effort should be made to find a lessee who will keep the land in production who will work to reverse and eliminate subsidence. An alternative consideration should be a 400-foot easement around Delta levees and adoption of policies to add more fill behind Delta levees to reinforce them. (RR R11)

9. We concur with each of the other Recommendations in this Chapter (RR R1, R3, R5, R6 and R12.)

## CHAPTER 8 – DELTA AS AN EVOLVING PLACE.

While our coalition is in general agreement with the majority of recommendations that are presented in this chapter, we feel that it has serious overall shortcomings and oversights. They are: a lack of specifics or quantitative data by which performance can be measured; no recognition that water quality and improved water flows through the Delta are an integral part of the Delta as Place; the absence of integral involvement of Delta residents and Delta communities in the planning for the Delta's future. No one can fully understand the "Delta as Place" without living there and experiencing the unique place that it is. In this present draft, Delta communities are described as theme park type of small towns rather than the working communities that they are. Furthermore, recreation and tourism are given more weight than agriculture, when agriculture is the primary economic activity within the Delta. Without comprehensive and meaningful involvement of Delta residents, there cannot be a Delta Plan that will be favorably accepted or that can be successfully implemented. In short, this chapter has not provided the focus on the Delta that it deserves.

When comparing the co-equal goals with the object of Congress in granting swamp lands to the states (1850 Swamp and Overflow Land Act), the co-equal goals should be consistent with *increasing the general prosperity* of the Delta, as required by the Act. The reflooding of Swamp and Overflowed Lands, the deprivation and degradation of the water supply to such lands, and other acts of the State detrimental to the productivity and prosperity of such lands is clearly inconsistent with the State's obligation to carry out the purpose for which the lands were granted to the State.

Additionally, Water Code Sections 12200 - 12205 are specific as to the requirements to provide "adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban and recreational development". An evolving Delta consistent with Water Code Section 12201 is one which maintains and expands agriculture, industry, urban and recreational development. The Delta as an evolving place is to be positive not negative. The Sacramento-San Joaquin Delta Reform Act of 2009 cannot be properly interpreted to allow harm to the future prosperity of the Delta.

Other important considerations that must be an integral part of the Delta Plan are:

1. The Delta Protection Act of 1992, which was enacted to prevent inappropriate or excessive conversion and urbanization of farmland in the Primary Zone of the Delta. The Delta Plan must take this important point into consideration.
2. The Delta Protection Commission's Land Use & Resource Management Plan which identifies agriculture as the primary land use in the Delta and seeks to protect its economic production throughout whole Delta. Between 1984 and 2008 almost 560,000 acres of Prime Farmland was lost or converted statewide due to urbanization, low density rural residences, mining, and ecological restoration projects. This statewide loss is equal to the size of Solano County, and should be avoided when possible by focusing on government lands and existing habitat areas that could be improved to benefit additional species.

3. Other local plans such as Suisun Marsh Habitat Management Plan, Delta County HCPs, and Yolo Bypass Wildlife Area Land Management Plan must be factored into the Delta Plan, including many other local plans that have spent years and millions of dollars to develop and manage.

4. A recognition of the high level of uncertainty associated with BDCP Conservation Measures and recent criticism from the National Academy of Sciences for critical gaps in science, which should necessitate a cautionary approach by the Delta Stewardship Council to endorse or support widespread farmland conversion to habitat that will have significant economic impacts to the area.

5. Although a new water conveyance system is being planned by BDCP, it may never be completed or permitted, or may be stalled for decades due to litigation (the legal dispute between Sacramento County and EBMUD lasted 40 years before resulting in the new Freeport diversion facility. Therefore, the Delta Plan should include strategies on how to improve the co-equal goals if the new water conveyance facilities are delayed or not constructed.

6. The Delta Plan should not only focus on the amount of additional habitat to be restored, but should first prioritize increased management and functionality of existing habitat restoration areas that were completed in preceding years, before converting more farmlands to habitat. Over the last several decades, numerous habitat projects have been funded and constructed in the Delta, but after several years, many of these existing projects are experiencing neglect due to lack of adequate funding to manage and monitor them for species benefits. The Delta Plan should also focus on how habitat areas can be integrated into current and evolving agricultural lands.

7. The Delta Plan should set forth policies and recommendations for safe harbor agreements, good neighbor policies, and a secured endowment to cover any future claims for damages to property owners resulting from habitat restoration in the Delta.

8. The Delta Plan should reiterate the Delta Conservancy's mandate that land will be required for restoration purposes only from willing sellers. In addition, the Delta Plan should call for additional applied science and economic analysis of the tradeoff of terrestrial habitat for additional aquatic habitat, which may be good for water export permits but harmful to Delta communities.

9. The Delta Plan should create a long term funding mechanism for dealing with public nuisances if recreation is to be promoted as a greater economic driver within Delta communities. Funding needs to be secured to handle public safety issues, littering, theft, vandalism, and vagrancy for Delta landowners, as present levels of law enforcement are woefully inadequate to address any increases in tourism.

10. The Delta landowners and economy should not have a disproportionate burden for Delta fixes that intended to benefit statewide interests. Therefore, securitized endowment funding should be recommended for: fish screening and consolidation of existing intakes;

loss of local tax revenue and assessments; third party impacts; and maintenance of restored habitat areas.

There must be recognition of tribal cultural use of the Delta as a major trading place and center of many tribal community ceremonial places as well as the need and respect for the Delta as the transformation place of salmon from fresh water to salt and back again. The Plan fails to include tribal interests in the Delta and the importance of the waters to lifeway and salmon habitat restoration and continuance.

Our responses to your individual recommendations are:

1. We concur that the Delta Protection Commission's Economic Sustainability Plan should include recommendations on public safety, economic goals and policies, updates to DWR's flood management plans, and encouragement of recreational investment. (DP R1)

2. We agree that The Delta Protection Commission should initiate recommendations related to designation of the Delta and Suisun Marsh as a National Heritage Area. (DP R2)

3. We agree that The Department of Transportation should partner with local cities and counties to establish major gateways and improve access. (DP R3)

4. We agree that The Department of Parks and Recreation should develop funding sources and partner with other state and federal agencies, counties, conservancies, and nonprofits to conduct recreation use surveys as indicated in the Plan. (DP R4)

5. We support that The Department of Fish and Game's collaboration with other organizations to expand recreational opportunities. (DP R5)

6. The Department of Boating and Waterways should certainly coordinate with the U.S. Coast Guard and state and local agencies on an updated marine patrol strategy for the region. (DP R6)

## CHAPTER 9 – FINANCE PLAN.

1. As stated in the cover letter to these comments, Public Trust balancing must be incorporated into all aspects of a Delta Plan, especially in the economic analyses that must be an integral part of the Financial Plan. (FP P1)

2. Based on the BDCP Costs shown on Page 209, Water Conveyance Costs (the Water Supply Reliability portion of the Co-Equal Goals) are 70% of total project costs. This represents a wide disparity in the legislatively mandated Co-Equal goals for Water Supply and Delta Ecosystems Restoration. This very unequal apportionment of project costs by BDCP is the clearest indicator that increasing water supply is the overriding objective of the BDCP sponsors and that ecosystems restoration will never be an equal goal. This discrepancy needs to be communicated by the Council to the BDCP as an indicator that the eventual DEIR produced by BDCP will not meet the legislative requirements set for the "Co-Equal Goals." (Version 2.1)

3. Under the category of "Immediate Needs," please include "public health" as requiring urgent expenditures. The Pacific Institute report cited in Chapter 6 identifies a need for capital infrastructure for communities with nitrate contamination at $150 million, but urgent expenditures are needed for interim solutions, including operation and maintenance of treatment systems, and funding for point-of-use or point-of-entry. No funding is available for either of these options to provide safe drinking water in the short term. (Page 208, line 17)

4. The call for DWR to develop an assessment of the state's water infrastructure needs through the California Water Plan is a guarantee that water quality will be slighted. Unlike DWR, both the State Water Board and the Department of Public Health develop regular Needs Surveys for wastewater and drinking water infrastructure. These surveys and the Project Priority List for the Drinking Water State Revolving Fund should inform any needs survey. While this recommendation currently looks at small-scale storage and conveyance projects, it ignores basic investments like water meters, replacement of leaking pipes, and conservation incentives for residents of small water systems. (FP R5)

5. Despite the objections to Diversion Fees expressed in previous Draft Delta Plans, we recommend that the Council continue exploration of a water diversion fee and a Delta export fee by the Council and the State Water Resources Control Board. The top priority of such diversion and export fees should be to support ecosystem restoration efforts. This system of fees is founded on the responsibility of all water users under the public trust to contribute to ecosystem restoration. Development of these fees should consider the following: (FP R6, R8, R10)

    - Long-term habitat restoration and species recovery funding required to achieve the co-equal goals.
    - An appropriate share of public funding for ecosystem restoration efforts, as well as likely state and federal funding, given the pressures on the state and federal budgets.

- Contributions by water users to other system-wide ecosystem restoration efforts. Site specific, water agency local mitigation costs (e.g. the installation of fish screens) should not be considered for crediting in the development of these user fees.
- These water fees should not be used for the purchase of water to achieve compliance with regulatory requirements, as was the former CALFED Environmental Water Account.

6. The development of information related to financing (such as the identification of beneficiaries and stressors and detailed financing scenarios) should be undertaken simultaneously with the development of major capital decisions, in order to inform planning efforts. The Council should assure that this is being accomplished by the BDCP in order for BDCP to be able to produce a plan that is consistent with the requirements of a Delta Plan. Development of finance plans should not be delayed until the conclusion of capital planning efforts. (FP R6, R8, R10)

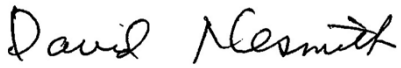
    - We note that the word "Framework" has been added to this chapter title with the introduction of the Third Draft. While we understand that: "Many of the policies recommended in the Delta Plan will not be fully developed and more detailed costs will be determined at a later date" (from the Second Draft), we recommend that as much detail as possible on alternative costs be included in the Draft EIR; presenting only a *framework* for a finance plan will not be adequate.

7. The primary purpose of a public goods charge should be to fund investments in efficiency, water recycling, groundwater clean-up, stormwater capture, and other tools that can reduce reliance on imported supplies. (FP R12)

8. A public goods charge could ensure a minimum investment by all urban and agricultural water agencies in water user efficiency and other tools that can reduce reliance on imported water. It could also provide consistent funding over time. (FP R12)

9. The CPUC's recommended water public goods charge is focused on water efficiency – broadly defined -- including agricultural and urban water use efficiency, water recycling, stormwater capture and groundwater clean-up efforts, and resulting surface water quality impacts. We recommend that the Delta Plan require a volumetric approach to such fees as well as contributions by both agricultural and urban water users. (FP R12)

10. Finally, the Council needs to expand its vision on fee possibilities. A Water Resources Renewal and Protection fund should be established that places a volume fee on both water exported and discharged. These fees need to go to more than just conservation efficiency projects. Funding needs also to include watershed protection projects throughout the Sierra, the Coastal Regions, and other suitable areas of the state.



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*Capt Brian Guiles*
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*Capt Chris Duba*
Silver Fox Charters

*Capt Craig Shimokosu*
New Salmon Queen Charters

*Capt Dale Walters*
Que Sera Sera Charters

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*Capt Dennis Baxter*
New Captain Pete Charters

*Capt Don Franklin*
Soleman Sportfishing Charters

*Capt Ed Gallia*
New Easy Rider Charters

*Capt Frank Rescino*
Lovely Martha Charters

*Capt Harry Necees*
Checkmate Charters

*Capt Jack Chapman*
Lovely Linda Sportfishing

*Capt Jacky Douglas*
Wacky Jacky Charters

*Capt James Robertson*
Outer Limit Charters

*Capt Jay Yokomozo*
Huck Finn Charters

*Jimmy Robertson*
Outer Limits Charters

*Capt Joe Gallia*
El Dorado III Charters

*Capt John Atkinson*
New Ray Ann Charters

*Capt John Kluzmier*
Sir Randy Charters

*Capt Ken Stagnaro*
Stagnaro's Charters

*Capt Nick Lemons*
Star of Monterey Charters

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**ATTACHMENT I**
**A SAMPLING OF RESOURCES AND BEST PRACTICES FOR PUBLIC TRUST ECONOMIC ANALYSES**
**ENVIRONMENTAL COALITION COMMENT LETTER TO THE FIFTH DRAFT DELTA PLAN**

1. The U.S. Water Resources Council's *The Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G).* The *P&*G helps federal agencies plan water-related projects. It's somewhat out of date but the National Research Council of the National Academies' review of proposed changes to the *P&G* contains valuable insight into current best economic practices.[27]
2. The California Department of Water Resources (DWR) developed the *Economic Analysis Guidebook (Guidebook)* in 2008 to address deficiencies in the *P&G*. The *Guidebook* employs up-to-date methods and describes the environmental consequences, social effects, and monetary and non-monetary costs and benefits of water-management alternatives economics.[28]
3. DWR has also developed a 2005 four-part study that describes the importance of considering the full range of economic costs and benefits of public policies that affect aquatic resources.[29]
4. The U.S. Environmental Protection Agency (EPA) released the third edition of its *Guidelines for Preparing Economic Analyses (Guidelines)* in December 2010.[30] It accounts for new literature published since the last revision and brings the *Guidelines* consistent with current best economic practices. The latest update includes detailed recommendations on identifying and describing baseline conditions that would exist with and without a proposed policy revision or regulation and an expanded description of methods of defining and valuing ecological benefits of projects and policies that protect natural resources.

[27] National Research Council of the National Academies. 2010. *A Review of the Proposed Revisions to the Federal Principles and Guidelines Water Resources Planning Document*. Committee on Improving Principles and Guidelines for Federal Water Resources Project Planning, Water Science and Technology Board, Division on Earth and Life Studies.

[28] California Department of Water Resources (CDWR). 2008. *Economic Analysis Guidebook*. The State of California. January.

[29] California Department of Water. 2005A. *Ecosystem Valuation Methods. Revised Draft*. Multi-Objective Approaches to Floodplain Management on a Watershed Basis. May. 2005B. *Natural Floodplain Functions and Societal Values Revised Draft*. Multi-Objective Approaches to Floodplain Management on a Watershed Basis. May. 2005C. *Middle Creek Flood Ecosystem Restoration Project Case Study: Benefit and Cost Analysis*. Multi-Objective Approaches to Floodplain Management on a Watershed Basis. May. 2005D. *Floodplain Management Benefits and Cost Analysis Framework. Revised Draft*. Multi-Objective Approaches to Floodplain Management on a Watershed Basis. June.

[30] National Center for Environmental Economics. 2010. *Guidelines for Preparing Economic Analyses. U.S. Environmental Protection Agency*. EPA 240-R-10-001. December.

5. EPA's Science Advisory Board (SAB) has also released a report titled, *Valuing the Protection of Ecological Systems and Services* in May of 2009.[31] The report describes methods of identifying and describing the economic significance of natural resources and associated ecosystem services affected by policies or projects. The SAB noted the importance of valuing ecosystem services using up-to-date economic methods, and promoting collaboration among social scientists and biophysical scientists. Many of the recommendations have relevance to assessing the economic effects of water allocations in the Delta.
6. EPA also has prepared a guide for assessing cost-effectiveness and cost-benefit analysis for groundwater programs.[32]
7. Even a cursory review of widely used textbooks and the scientific literature reveals numerous approaches and tools that meet generally accepted and prevailing standards of practice for evaluating alternative approaches and balancing public trust uses with other beneficial uses of scarce water supplies.[33]

[31] Environmental Protection Agency (EPA) Science Advisory Board. 2009. Valuing the Protection of Ecological Systems and Services. EPA-SAB-09-012. May.

[32] U.S. Environmental Protection Agency (EPA). 1993. *Guide for Cost-Effectiveness and Cost-Benefit Analysis of State and Local Ground Water Protection Programs*. U.S. Environmental Protection Agency, Office of Water, and Office of Ground Water and Drinking Water. April.

[33] Field, B.C. 1997. *Environmental Economics*, 2nd Edition. San Francisco: McGraw-Hill Company, Inc. - Lesser, J.A., D.E. Dodds, and R.O. Zerbe, Jr. 1997. *Environmental Economics and Policy*. - Goodstein, 1999. E.S. *Economics and the Environment*. - Field, B.C. 1994. *Environmental Economics*. - Rossi, P. and H. Freeman. 1982. *Economics*, 13th Edition. New York: McGraw-Hill Book Company. - Roback, J. 1982. "Wages, Rents, and the Quality of Life." *Journal of Political Economy* 90: 1257-1278; 1988. "Wages, Rents, and Amenities: Differences among Workers and Regions." *Economic Inquiry* 26: 23-41. - Partridge, M. and D. Rickman. 2003. "The Waxing and Waning of Regional Economies: The Chicken-Egg Question of Jobs Versus People." *Journal of Urban Economics* 53: 76-97. - Blomquist, G.C. and D.R. Johnson. 1998. "Resource Quality Information and Validity of Willingness to Pay in Contingent Valuation." *Resource and Energy Economics* 20:179-196. - Loomis, J., T. Brown, and J. Bergstrom. 2007. "Defining, Valuing, and Providing Ecosystem Goods and Services," *Natural Resources Journal* 47: 329-376. - Daily, G.C. (ed). 1997. *Nature's Services: Societal Dependence on Natural Ecosystems*. Washington, D.C.: Island Press.